trends in education

Summer issue

1979 2

Schools/Industry Links

Department of Education and Science
HMSO 70p net Annual subscription £3·28 including postage

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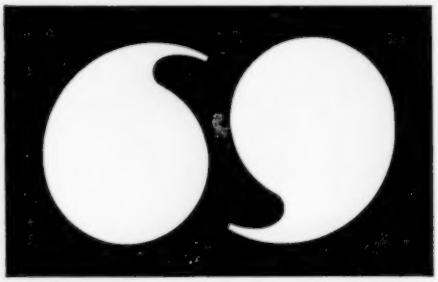

Talking Points

Father William's boys

A newspaper cartoon of the mid-forties shows a small boy gazing at a tobacconist's window and complaining to a friend: 'It's no good. We're too young to smoke and too old for orange juice'.

Now that smoking has changed from being a social habit to an antisocial one, we need not bother too much with the first of these grievances but we all ought to have some sympathy with the second, if only as a symbol. (If your mind can't quite grasp the concept of symbolic orange juice, bear with me a moment.)

The subject of this issue of *Trends* is schools/industry links. The links under discussion are intended to give schools a greater insight into what working in industry is like and, conversely, to give industry some idea of what schools are doing and why they do it that way. Schools/industry links are not being established to attract school leavers into industry, but they are intended to break down the prejudices and misunderstandings that often prevent school leavers (and graduates) from contemplating a career in industry.

Look at the 'situations vacant' column of your daily newspaper. Here, for example, are a few chosen at random from a single page of the *Daily Telegraph*. A production engineer wanted, aged about forty. A telecommunications engineer, mid-twenties. A personnel manager, aged about twenty-five. A management consultant, aged about thirty. A production manager, aged about thirty-five.

Naturally, employers want to take on staff with a reasonable number of years of useful working life ahead of them. Equally, I can understand that they will want to provide their employees with an attractive career structure. But where is a young employee to go when he has already reached the top of the tree? And is it necessary to suggest, in the interests of corporate planning, to a range of applicants for jobs that they are too old at forty-five, or thirty-five, or thirty, or even less?

Besides, when the trend is towards continuing education – even continuing vocational education and training – so that people take degrees or add to their qualifications while they are already in employment, does it make economic sense to exclude them from certain jobs merely because of their age? We rightly condemn racism and sexism. Shouldn't we equally condemn ageism?

The boy who was too young to smoke and too old for orange juice would be in his early forties now. His complaint would now be differently phrased but would not be too different in substance: too young to retire but too old to be a personnel manager. Personnel management, telecommunications engineering or production management for many people is just symbolic orange juice.

Schools/industry links

The Green Paper 'Education in Schools' suggested that local education authorities, schools and industry should work more closely together, and it recommended that industry, the trade unions and commerce should be involved in curriculum planning processes at national and local level. Subsequently in DES Circular 14/77 local authorities were asked to report on the steps they had taken to promote contacts between pupils and teachers in individual schools and local industry, commerce and trade unions as a means of giving pupils a better understanding of the world of work and of helping teachers to relate school curricula to the opportunities open to their pupils.

Acknowledgement is due to the individuals, companies and organizations who have, in some cases for many years, been active in this field. Among these is the LEA careers service, one of whose functions is to act as a bridge between full-time education and the world of of employment. It has been possible to include in this issue only a few examples of the many initiatives. The range and variety of these has led to recognition of the need for coordination. Representatives of national and regional organizations meet in such contexts as the Department of Industry's Industry/Education Advisory Committee and the Standing Conference on Schools' Science and Technology. Some local authorities have long-established liaison committees; in a letter to chief education officers issued in July 1978 the Department of Education and Science commended this practice, while pointing out that any new arrangements need to be related to existing local activities.

Within the school there needs to be not only a policy on education about industrial society but also coordination of the contributions made by the various subjects and activities. On the other hand, it is essential that coordination should not inhibit individual initiative. An important criterion for assessing schools/industry liaison is the quality of the learning experiences it offers to the pupils.

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Schools and industry – specialized in-service training for teachers

J. W. Nisbet
Director, Understanding British Industry

'. . . the great majority of teachers in all types of schools are now only too anxious that their work should be understood, that education should be related to the facts and needs of the outside world.' This quotation has a contemporary ring about it. Many would, I suspect, place bets that it came from the Green Paper* or from a statement by a teachers' association. In fact, it dates back to a government committee's report† published in 1928. It might be a harsh judgement, but the impact of the 1928 report has to be set against a quotation from the 1977 Green Paper: 'Boys and girls are not sufficiently aware of the importance of industry to our society, and they are not taught much about it'. This feeling was given forcible expression a year earlier when the Confederation of British Industry (CBI) set up the CBI Education Foundation and began to collect funds for a project called Understanding British Industry (UBI).

If not much progress was made between 1928 and 1977, what hope is there for the future, and what is it that we need to do now that was not done sufficiently well in the past? After nearly two years in the field, UBI has placed its emphasis on the in-service training of teachers about industry, and, wherever possible, on some reciprocal, albeit different, arrangements for people from industry to learn about education.

UBI is firmly committed to working with and through teachers, but this presents a number of substantial problems.

The problems

Few teachers are secure enough in their knowledge of industry and commerce to be able to teach about it effectively. Most secondary school teachers will have spent a minimum of three – and sometimes as many as five – years in higher education preparing to teach their subjects. With this background of academic and professional training they can reasonably be expected to feel secure in transferring to young people a knowledge of history, geography, economics, and so on. But how are they to have the same feeling of security about industry and commerce if they have never worked in either, or indeed if they possess little in the way of suitable reference and teaching materials? It seems rather pointless to consider whether industrial and commercial studies should be developed as examination subjects or whether this would overcrowd the curriculum if it is not possible to teach the subject in the schools because the teachers and resources for it are not present. Equally, the alternative approach, favoured by

* *Education in Schools: A Consultative Document*, Cmnd 6869. London: HMSO, 1977.

† Report of the Committee on Education and Industry (England and Wales). London: HMSO, 1928.

some, that teaching about industry should occur across the curriculum as opportunities arise, will not make much progress unless there are teachers knowledgeable about industry and the whole world of work.

We have to face the problem of reinforcing teachers' knowledge about industry and commerce and doing this in ways that will make it possible for them to teach pupils across the subjects of the secondary curriculum.

Initial training

Most teachers begin their training at the age of eighteen to twenty-one with little experience of the outside world. This is not to argue, as some might, that before embarking on a course of teacher training every teacher should have at least a year's experience of work, because there must be some doubt as to the validity and usefulness of experience gained at eighteen or nineteen. The problem of the relevance of the world of work to education and of education to the world of work has, however, to be tackled as part of the preparation students need for a career in teaching.

Opportunities might be taken during the initial course of teacher training to draw the students' attention to the fact that pupils ought to be given a basic understanding of the importance of industry and commerce. This means that the student will need to have some contact with teachers who have had experience of industry and commerce, and with people from industry and commerce who are sensitive to the needs and realities of our education system; above all, students should be given some practical advice on how to start up schools/industry liaison schemes that are likely to prove productive. UBI is working with Homerton College, Cambridge, and also with the Liverpool local authority to develop a course about industry and commerce as part of the induction year programme the authority has instituted for new teachers.

If the approach to schools/industry liaison is to be encouraged effectively at the initial training stage, there are two factors that are extremely important. First, the staffs of the colleges of education and the institutes need to contain a proportion of people with up-to-date experience of industry and commerce, and with enthusiasm for the topic. If they do not, this area will not be regarded as of high priority by young teachers. Second, the young teacher, when emerging from the college of education or post-graduate training, needs to go into a school where there is a receptive atmosphere for schools/industry liaison, otherwise early enthusiasm can be killed.

In-service training for teachers

Stressing the importance of knowledge about industry and commerce at the initial training stage may help a good deal in the longer term, but in the short term the emphasis must be on in-service training.

At present there are a number of ways teachers may acquire some experience of and information about industry and commerce. For some years the CBI has run a scheme where teachers can gain experience by being seconded to industry for up to three weeks. There are also arrangements for teachers of scientific subjects to be seconded for up to one term to carry out projects in industry. UBI, in cooperation with the Birmingham education authority, began a pilot scheme in September 1978 in which four experienced teachers from Birmingham secondary schools were seconded to spend one year in local industries.

All these schemes have much to commend them, and although comparatively few teachers take part, this does not negate the substantial efforts made by local authorities, teachers and employers in industry and commerce to promote such schemes. Taken together,

however, and with their present emphasis, they are not likely to produce the sort of results that the 1977 Green Paper was looking for, and that industry and commerce itself would like to see over the next five to ten years.

A major problem is that comparatively few teachers can be released for more than a week at a time to get experience of industry and commerce. This is certainly better than nothing at all, but if only a week to three weeks is available, then it is doubtful whether this has much lasting effect on the work of the teacher. It is a useful and interesting experience and it will no doubt give insights into industry. It may lead to contacts that can be developed later, but it is too limited. This is not to decry the one-to-three-week schemes, but is rather to try to ensure that where teachers can only be seconded from one to three weeks, this experience in industry is seen as part of a rather longer programme of in-service training.

An encouraging development has been the CBI's Introduction to Industry scheme developed in 1978 by the Avon LEA in conjunction with HM Inspectorate. This scheme was set up as part of a DES-funded in-service training course which included four evening meetings prior to the three-week industrial experience and sixteen follow-up evening meetings.

Priorities

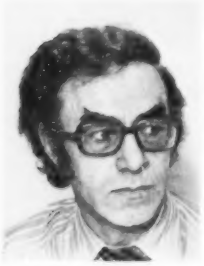
Most local authorities now give high priority to the in-service training of their teachers. The progress of schools/industry liaison, leading to a better understanding by pupils of the importance of industry and commerce in the creation of national wealth, is tied vitally to the priority this area is given within each local authority's budget for in-service training. At present, the Inter-Authority Pooling Committee is considering a proposal from UBI that local authorities participating in schemes involving a one-year secondment of teachers to industry, along the lines of the pilot scheme in operation in Birmingham, may have their expenditure accepted as 'poolable'. If the Pooling Committee agrees, this will allow local authorities to begin to build teams of teachers able to use their experience in the in-service training of wider groups of teachers as well as in schools.

Local authorities must realize that secondment to industry is only the beginning – the real work starts when the teachers return to the schools. They must be given adequate time to develop and hand on their experience. This will require the further redeployment of resources, so that the schools releasing teachers on secondment retain supplementary staffing, not only for the period of the teachers' secondment, but also for at least one year after their return. Employers and teachers must also understand that industry and commerce change rapidly and that teachers need time to keep abreast of new developments. It would be counterproductive if teachers who had substantial secondments to industry were used for too long on curriculum development and in-service training. Probably their usefulness and the relevance of their experience will have been eroded after two or three years. Employers must face the continuing burden of renewing the experience of the teachers and advisers who form their in-service training teams if schools are to keep abreast of developments in the world of work.

Progress and cost

Our schools cannot gain a proper understanding of industry and commerce on the cheap through programmes peripheral to the central business of education and, indeed, to industry and commerce. Many firms now realize the extent to which they have to commit substantial

resources to promote a balanced understanding of their work and their relevance to the economic health of the nation. Those in education must accept a similar commitment. There are no short cuts – the allocation of substantial funds to in-service training and follow-up programmes must be given priority if real progress is to be made. Otherwise we shall go into the twenty-first century not merely commenting on the lack of understanding among the population about the importance of wealth creation, but lamenting the opportunities we missed in the late 1970s when the tide of opinion was flowing right and a marginal rearrangement of priorities and resources might have achieved so much.



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Schools and industry — a view from the TUC

R. A. Jackson
Secretary, TUC Education Department

There is no shortage of advice for teachers about the importance schools should attach to preparing young people for working life. They are urged to send them out of school with life skills that will enable them to obtain and hold jobs. They are expected to ensure that youngsters get some real work experience. Positive attitudes are demanded from school leavers towards the disciplines of work, together with a greater understanding of the significance of productive employment in our society. Technology, it is urged, must be given more prominence in schools. Young people have the right to know how society's wealth is created and used. Economic and political literacy should be part of all secondary school objectives. Microelectronics is an essential part of the curriculum – so teachers are told. And, for good measure, young people have now to be prepared for 'non-work'.

Divergent views

Such advice is clearly confusing, if not contradictory. This is not surprising, since there is no consensus about the value of industrial employment to the individual, and different views are expressed about the value to society of policies pursued by industry. But the issues raised in giving advice to teachers are, nevertheless, of fundamental importance in shaping education policy. An individual's place in society – his status, income, opportunities for personal fulfilment, health, and much more besides – are still largely determined by his or her employment. On the other hand, the quality of Britain's general economic performance, and the contribution made by the wealth-creating sectors in particular, are the prime factors that determine the standards of living of all. How does education weigh the needs of the individual against those of society as a whole? Is there a proper balance? HM Inspectors in their working paper *Curriculum 11–16** raised the issue when they said that a balance had to be achieved between the need to equip young people to take their place as citizens

* *Curriculum* 11–16. *Working Papers by HM Inspectorate: a contribution to current debate*. Department of Education and Science, 1977.

and workers, and the need to educate them to think for themselves, to resist exploitation, to innovate, to question the bases of values and to be vigilant in the defence of liberty.

Teachers and industry

Teachers, however, lack the experience needed to understand the nature of industrial employment. Unemployment is readily understood by all. But the extent to which technology continues to impoverish work is less well understood. The same is true of the extent to which health and safety hazards remain across much of industry. Opportunities for personal fulfilment are denied to the majority of workers, and this is compounded by denying them any say in the running of industry. Without a knowledge and understanding of the nature of industry, teachers are unable effectively to guide the career choices of young people.

The teacher's task in giving a balanced view of industrial society is, of course, made difficult by a number of factors over which he has little control: the system of teacher recruitment and training that restricts teachers' experience to the school – college – school complex; the external pressures on schools that place undue weight on traditional academic attainments; teaching to a subject-structured curriculum dominated by public examinations; and the lack of support teachers have once in post. It is little wonder that the overwhelming majority of young people leave school with little understanding of current economic affairs and are ill-equipped to meet the challenges that face them in working life.

Curriculum reform

The TUC is therefore looking for a major shift in the direction of the whole curriculum – away from an undue emphasis on acquiring competence in academic disciplines and towards an emphasis that gives young people a broadly based school experience that relates more closely to the world as it is and prepares them to face the inevitable economic, social and political changes that will shape their future lives.

But such changes have to be accomplished without damaging standards and confidence within the schools, and without undermining the fundamental task of schools to help pupils reach their full potential. In particular, it has to be change brought about by teachers themselves. All subject specialisms are involved. But new relationships will need to be established between subject teachers and outside interests – including employers and trade unionists. It would also be irresponsible to expect fundamental changes overnight without allowing teachers time and resources properly to design and test new approaches to preparing young people for working life.

The TUC believes that the Schools Council should have a central role in initiating the necessary curriculum reforms. It therefore welcomes the intention of the Schools Council to hold a continuing dialogue with representatives of industry – employers and trade unions. Industry (and that includes commerce and service industries) has a responsibility to assist teachers to understand the varied and changing implications of employment for the future working lives of those now at school. There will often be agreement – as well as differences of view – and, equally, there will be much speculation and not a little uncertainty. Given the significance of preparing young people for working life, schools must face the need to introduce some examination and discussion of these controversial and vital issues in all their work. The Schools Council, the Department of Education and Science, and both sides of industry must recognize the need to provide

teachers with far more help than they have hitherto received. It is not, in the TUC's view, realistic to overburden teachers with exhortation and advice – or with ill-informed criticism about the supposed shortcomings of today's school leavers. We must begin to provide teachers with concrete resources to enable them to undertake the task we seek to place upon them.

Schools Council Industry Project

The TUC regards the Schools Council Industry Project as the first step towards improving teachers' understanding of industrial society. The project is based on local curriculum development, achieved through the experience of teachers developing new teaching approaches and redesigning mainstream subjects, such as history and English literature. The project involves schools in five areas: Cleveland, Wandsworth, Mid-Glamorgan, Wiltshire, and Sandwell. The Project Consultative Committee, which includes representatives of the Trades Union Congress, the Confederation of British Industry, and other educational interests, is stimulating the design of local materials that will later form the basis for supporting the work of teachers throughout the country.

The project is taking time to become established, but, given the need to involve employers and trade unions, and in view of the far-reaching implications of the project, it is necessary to proceed cautiously. It starts from the individual and examines the nature of jobs and working life, the rights and responsibilities workers have, the quality of the working environment and the rewards individuals receive. It then moves from the individual to consider organizations, including the enterprise and the union, through to the nation and on to international perspectives. Inevitably such a scheme is ambitious in the parameters it sets, yet unless the whole project is planned in this total context, any particular curriculum development could be unbalanced. If it is to be a vocationally orientated course of study, including aspects such as the introduction of work experience and the broadening out of a particular subject in an industrial context, it is essential that teachers do not take an unduly narrow view of the scope of such educational experience.

A pluralist approach

However, it is not only the scope of industrial studies that makes curriculum developments difficult. The subject itself is highly controversial. The diversity of advice teachers receive about how to prepare young people for working life, and for what purpose, reflects the differing interests of employers and workers, and, indeed, of Government.

Industrial societies still display serious problems of poverty, characterized by gross inequalities of opportunity, ownership and control and distribution of wealth. An objective assessment of industrial society must be concerned with such social aspects, about which there are various and divergent views. Schools will need to face the simple truth that agreement about what constitutes the national good, or international well-being, does not exist. There is not one group's or nation's opinion that does not conflict with the interests of other groups or nations. If the conflicting interests in society are to be accommodated within policies that win broad consent, then the differences must be faced honestly.

Teaching will, therefore, have to reflect the real differences that exist in industrial society; recognizing that plurality of interests necessarily means conflict. Vigorous discussion about controversial themes does not imply the reinforcement of conflict. On the contrary,

by facing up to differences of opinion and of interest, young people will be better able not only to understand their own positions in society, but also to appreciate the needs and interest of others. It is by means of such understanding that differing interests can best be reconciled and accommodated.

Using the shop steward

For these reasons the role of trade unions must be considered in any preparation for working life. This is why the TUC has organized workshops for local trade unionists in each of the local areas involved in the Industry Project to discuss the most effective input the trade union movement can make to the development of new courses. Trade unionists can make an enormously valuable contribution to the general education of young people by sharing with them some of their experiences of working life, and by giving meaning to the principles of solidarity and collective action. The input of trade unionists must, however, be structured; simply allocating a local shop steward ten minutes after school assembly one morning to explain to prospective school leavers what they need to know about the trade union movement is not good enough. But, unfortunately, this is not uncommon.

First, the curriculum should give a general introduction to trade unionism before drawing on the experience of local trade unionists. Second, it is essential that shop stewards talk with small groups – they are not trained teachers, and need a relaxed informal atmosphere in which to exchange views and opinions. Third, there must be some follow-up, or at least some opportunity to continue the dialogue once established.

Work experience

The Industry Project also provides an invaluable opportunity to pilot the use of work experience in a more structured way, as part of a coherent study of industrial society. The TUC has always rejected the idea of using work experience for the 'less able', or for job sampling, or as an isolated experience unrelated to other school work. Work experience has to be preceded by much preparation, otherwise young people will not be ready to learn from it. A systematic approach has to be adopted in order to use young people's limited work experience in a valuable way. Attempts should be made to transfer the knowledge gained to widely applicable aspects of industry and employment. Teachers will need the help of employers and trade unionists in such tasks.

The curriculum and industry

Such relationships with industry and the wider community are a key to assisting teachers in curriculum reform. There are dangers nevertheless, but the professional independence of teachers will provide a necessary safeguard for a balanced education. The schools must not be subservient to any external interest, but professional judgement must not be established in isolation from community interests. Teachers need the support of parents and can benefit from the help of employers and workers.

The Schools Council Industry Project is but one model on which to develop these relationships. The TUC would support a wider strategy. The initial and in-service training of teachers should include industrial experience. The Taylor reforms for school government present opportunities for the positive involvement of the wider community in school government, while the Schools Council itself is also establishing an Industrial Liaison Group to encourage a discussion of all curriculum and examination issues. Many local education authorities are beginning to mirror these developments.

The test of how far such ideas succeed will be the extent to which they enable changes that provide a positive preparation for working life to take place in the school curriculum. Such developments will inevitably mean changes affecting many subjects, and indeed the structure of the school curriculum. Equally it is unlikely that these changes can be achieved without teachers wishing to adapt and develop new teaching methods. Such will be the fruit of cooperation.

For schools cannot stand outside society. HM Inspectors made the point in their report that schools are themselves political institutions involving power and authority, participation, and the resolution of different opinions. We need to widen the base of participation in these decisions, without damaging teacher interests, or the educational purposes of the school. Nor should it be beyond our wit to use the experience of decision-making within schools to provide the tools and experience for responsible participation by young people in industry and in society's affairs generally.

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The Youth Opportunities Programme: a bridge to work

Geoffrey Holland
Director of Special Programmes, Manpower Services Commission

Other contributors to this issue of *Trends in Education* will have framed both general and specific arguments for the importance of an effort on the part of educators, industrialists and politicians to bring the worlds of education and work closer together. This article discusses something that straddles these two worlds for a large number of young people – the Manpower Services Commission's Youth Opportunities Programme (YOP). YOP's role is entirely constructive – it acts as a bridge – a bridge helping many young people to set foot on the solid ground of regular employment: it would be better if the need for this bridge did not exist and if the kind of close liaison argued for elsewhere in this issue existed already. Now, however, the need is for immediate action, and this is what the programme aims to deliver.

A problem to be tackled

The historical reason for the existence of the programme – as indeed in part, at least, it is for the Great Debate as a whole – lies in the economic developments of the past decade or so. After a long period of almost full employment, the industrialized market economies have entered a recession from which it has proved remarkably difficult to emerge. Several kinds of economic forces are involved – growing competition from newly industrialized nations; changing technology in the developed economies; forces related to international currency fluctuations and those of business confidence. The net results are visible on the unemployment register, and in particular in the numbers of young people who spend long periods out of work. Readers of this article will not need much prompting to appreciate the significance to a young person of a period of unemployment immediately after

leaving school. This problem cannot be ignored any more than can the inability of a young person to read on entering secondary education – both are of central importance to what happens later in life.

It must not be assumed from this analogy, however, that the young unemployed are virtually identical with those who are unable to read, or who are educational failures for one reason or another. This is far from the truth. While it would be absurd to deny that the young unemployed are drawn disproportionately from the less able, it must not be forgotten that young people are at the mercy of the particular local environment in which they seek jobs, and there are therefore many areas of the country where those with quite high qualifications are unemployed. Moreover, the phenomenon of 'trading down' or lowering sights by relatively highly qualified young people is an equally worrying manifestation of the contraction of the youth labour market and, though less visible, will seriously diminish the range of skills this country will have to offer in the future.

The problem of youth employment is one that has its roots in our economic difficulties, but communication and information problems are also involved. On the one hand, young people do not know enough about the world of work; on the other, employers do not always know enough about young people, their needs, abilities and aspirations. Too often they base their judgement of young people on the sometimes inaccurate view of potential young employees provided by the media and by hearsay.

There is unlikely to be a solution to the general problem of unemployment until the developed economies regain their health, but we *are* in a position to do something about the communication and information problem, and this is precisely what YOP aims to do.

The programme

The programme is, in fact, a package of different schemes which, it is hoped, will meet the needs of the majority of unemployed young people. It partly consists of a number of different kinds of work preparation courses. These operate in various contexts – in employers' establishments, in skill centres and colleges of further education – but are united by the fact that they provide an introduction to the skills that are necessary in the work place. These Short Industrial Courses (SICs), which have been in operation now for three or four years, last for thirteen weeks and aim to bring young people up to the level of operator skill demanded by various industrial occupations. Employment Induction Courses (EICs), on the other hand, are much shorter – two weeks. The main purpose of these courses is to assess the young person's ability and aptitudes, to give intensive tuition in social and life skills and to provide general counselling on all aspects of the participant's position in the labour market. At the end of an SIC, a young person should emerge with the technical skills necessary for employment in the particular occupation for which he or she was trained and an appreciation of the wider requirements of working life. The latter cannot, perhaps, be formally taught, but it is nonetheless of crucial importance to the young person's employment. Emerging from an EIC, a young person will certainly not have achieved a level of skill comparable to that of a young person leaving an SIC, but he or she will have had the opportunity to taste a number of different jobs within one particular establishment, to discuss his or her impressions of these jobs with a specially designated supervisor and to develop his or her social and life skills in a sympathetic counselling environment. At the end of such a course the young person should

emerge with a clearer idea of what he or she can do and be better able to look for, and gain, employment.

In addition, the programme provides for a variety of other preparatory courses – currently at an experimental stage – which are intended to help those young people most severely disadvantaged in the labour market who are in need of some form of remedial help.

The other aspect of the programme consists of the 'work experience' options, of which there are four. The largest in numerical terms is work experience on employers' premises – the successor to the old work experience programme. The others are work experience on community service schemes, in training workshops, and on work experience projects.

In all four of these opportunities, the aim is that the young participants should work, supervised by, and alongside, adults in the execution of some definite task. This will be the operation of a production process in a factory through work experience on employers' premises, or the production of an article for sale in a training workshop. It might be the provision of services to others on a community service scheme, or the completion of some particular task of benefit to the community at large on project-based work experience. The virtue of all four kinds of involvement lies in the contact the young person has with the real world, in the course of which he or she has a chance both to develop specific skills and to learn about the requirements of adult roles in modern society.

It is also intended that participants on the work experience schemes should have the option to take day release to further education or off-the-job training. It is hoped that this may encourage them to consider the possibility of longer-term attendance with the aim of adding to their qualifications. It is particularly important that this door should be open, since young people who have become disillusioned with formal learning at school can have their interest renewed by seeing qualifications as relevant to their occupational ends.

The purpose

What are we aiming to achieve in all of this? The answer is that we are attempting to attack both sides of the communication problem outlined earlier. Young people can learn the skills required in the modern work place in a context that retains many good features of the learning environment yet is at the same time a working environment. And the employer has an opportunity, either directly – as in the case of 'work experience on employers' premises' – or indirectly – as in the case of the other YOP schemes – to see evidence of a young person's capability to perform a job task with responsibility, competence and maturity. The world of work is no longer an unknown quantity to the young person, and, conversely, the young person is no longer an unknown quantity to the potential employer.

The different kinds of course available under the programme were not designed in a vacuum. They take into account both the experience gained on the previously operated special measures – the job creation programme and the work experience programme – and the findings of research carried out for the working party on young people and work.*

Surveys carried out for the working party – the recommendations of which are embodied in YOP – indicated, for example, that substantial numbers of employers felt young people were deficient in

* See *Young People and Work*. Research studies commissioned and managed by Maureen Colledge, Geoffrey Llewellyn and Vernon Ward, Office of the Manpower Services Commission. Manpower Studies 1978/1. London: HMSO, 1978.

terms of attitudes to and understanding of work, and compared badly on these points with other alternative potential employees. Accordingly, if the effect of participation in the programme is to give a young person knowledge of the general expectations and requirements of employers, it will have made a valuable contribution to the reduction of communication problems in the labour market. Moreover, the content of the course was itself guided by the findings of survey research, which indicated young people's preference for certain kinds of locations of work or training course. As far as possible these have been taken into account in designing the provisions under a programme.

The Green Paper

As an educational programme, YOP is fully in tune with the spirit underlying two major recommendations in the 1977 Green Paper.* It is a programme that recognizes the part industry and commerce have to play in educating young people for their roles as citizens and producers by encouraging them to provide opportunities in which young people can learn at first hand about the world of work. And it is sensitive to local views and interests – thus fulfilling the aim of education being responsive to the community.

To this end the special programmes area boards (the specially constituted local bodies overseeing the organization and implementation of YOP in the twenty-eight operational areas of the special programmes division) bring businessmen together with education officials, trade unionists, local authority representatives and members of voluntary organizations. This provides a crucial channel of communication whereby the views of local businessmen can be taken into account in all aspects of the local operation of the programme. At the national level the special programmes board acts in a similar capacity with respect to the central management of the programme. As well as being responsive to the concerns of the business world and to the community at large, the programme is also designed to react to the development of events. The range of offerings currently available is by no means a fixed and immutable list, and it is the intention of the Manpower Services Commission to keep these provisions under constant review so that they can be adapted to changing circumstances.

* *Education in Schools: A Consultative Document*. Cmnd. 6869. London: HMSO, 1977.

Trends 1979/2

Industry and education – a Department of Industry view

Eric B. Bates
Head of the Industry/Education Unit at the Department of Industry

Over the past two years something of a spotlight has been focused on the relationship between education and industry. The Department of Industry (DOI), which is concerned with the performance of Britain's manufacturing industries, has very much welcomed this. This concern

should be widely shared by people in Britain, whether they work in industry or not.

Most activities we see around us make some contribution to our standard of living but, regrettably, many people have not grasped the full importance of the part played by manufacturing industry. If people fail to understand the importance of what industry does, this reflects on attitudes to careers in industry. If the sort of people we need to secure our industrial future place a low value on work in industry and go somewhere else, this can be a serious obstacle to improved industrial performance. Education cannot provide the whole answer to this problem of understanding, but it does offer by far the best hope of making progress, particularly for young people.

The importance of manufacturing industry

Our standard of living depends basically on how much wealth we create as a nation by producing goods and services for sale. We depend on our manufacturing industries for about a third of it. Manufacturing directly creates enough to provide for over half the money spent by central and local government.

Despite the contraction that has taken place in some of our traditional manufacturing industries, manufacturing still provides nearly a third of Britain's employment – seven million or so jobs. While we cannot look to manufacturing to provide much increase in opportunities for direct employment, our ability as a nation to create additional jobs outside industry for people of all abilities will depend heavily on our future competitiveness in manufacturing itself, because of the interdependence between industry and other activities.

Manufacturing accounts for more than half of Britain's total exports. Our surplus on overseas trade in manufacturing is still three times our surplus on services. Britain just cannot afford to lose this balance if we are to offset our debts to other countries on imports of food, drink, raw materials and fuels.

People who help our manufacturing industries to compete more successfully do a job of great national importance – something the whole community depends upon. We look to the education service to help make this widely understood.

Able people needed

The growing pressures of world competition make it increasingly necessary to improve efficiency in our manufacturing industries. These pressures also mean that the future of British manufacturing will depend more and more on those products and processes that emanate from knowledge, higher skills and expertise where we can maintain an edge over our international rivals. We have always set a standard of excellence in basic research.

In some industries, as we try to improve efficiency, we shall need to produce more goods with fewer people directly involved in making them. In particular, opportunities in manufacturing for the less skilled seem likely to diminish. Yet, at the same time, to be competitive in the future, manufacturing must attract more people of high calibre. These industries will need an increasing proportion of well-qualified people among their employees.

It will be particularly necessary to have a sufficient number of people with the qualifications and abilities needed to take responsibility for developing new processes and products. We need good people to set high standards in all functions. We must be good at design, efficient in production, and competitive in price and delivery. We must understand what the customer wants, see market opportunities before our competitors do, and be quick to apply new advances in

technology – for example, microelectronics, the potential for which is revolutionary to many industries. It is in these areas, at managerial level, that the technician, engineer and technologist have a vital part to play. We need more of our most able people to become well qualified in engineering and technology and to use their capabilities in industry to help to create Britain's national wealth.

It is not unusual these days for companies whose business has been making products to find that their customers are now looking for comprehensive advice and solutions to their particular problems. Products alone are not enough. Again, this means having a sufficient number of employees with technical expertise to provide these services.

Partly as a result of better education, the nature of personal relationships in industry is changing too. At management level, industry needs people who can lead a team, create a sense of common purpose about the work in hand, communicate objectives, inspire enthusiasm, and give employees greater opportunities to participate and share responsibility for those decisions that affect them.

Action in education

Against this background, the DOI has created an Industry/Education Unit, the purpose of which is to make a contribution to a better understanding, both in industry and in the education services, of the potential for improvement in industrial performance which could flow from a better appreciation of industry among teachers and students. Its objectives are: first, irrespective of their career choice, to improve young people's understanding of industry, particularly its role in creating national wealth and the ways in which it contributes to our standard of living; second, to encourage more young people, particularly the more able, to develop an interest in manufacturing careers and in the subjects at school and courses in further and higher education that can best lead to them.

These are not tasks that can be performed centrally by government. Progress depends on a local appreciation of these national needs and on local activity to help tackle them. The main job of the DOI Industry/Education Unit is to encourage initiatives that contribute directly to these objectives. There is a particular need for action at schools level where foundations are laid for future attitudes, and interest in subjects and careers is awakened. The Unit is therefore concentrating particularly on schools, and believes that certain areas are especially worthy of attention.

People in many local education authority areas concerned with schools/industry cooperation agree that information about activities and developments needs to be more readily available. Local people should be able to find out more easily what initiatives are being taken in their own area, what schemes and assistance are available from national and regional bodies, what interesting developments there are in other places that they might copy, and whom to contact locally about helping with existing activities or to pursue new ideas. The Unit has been suggesting that these needs could be met by a local information centre. Such a centre should not be merely passive but should actively disseminate the information it gathers to local industry and education and encourage more participation. More manufacturing companies need to be involved because all too often it is left to commerce and services to participate. The best way of providing such a centre needs to be worked out locally, but one possibility is to build such functions into science and technology regional organizations (SATROs).

Programmes

Programmes need to be introduced to help pupils (and teachers) to understand more clearly why industry is so important to our standard of living. It should be explained how our national wealth is created through the work of enterprises which add value—the difference between total revenue and the cost of bought-in raw materials, services and components; that is, the value that has been added to these bought-in materials and components by the processes of production—how industry provides jobs directly and indirectly; how it provides revenue from which non-self-supporting services can be supplied by central and local government; how it provides the products we use; and the importance of industrial exports that enable Britain to import. In a country like ours, it is surprising that this sort of knowledge has not been generally regarded as a part of basic education. Learning how the country earns its living is as important as learning about its history. It is therefore encouraging that more education authorities, schools and colleges are responding to the challenge and developing ways of communicating this information. But many young people are still leaving the education system without such understanding, and more effort is needed.

It is valuable if subjects and courses in schools and colleges can be related, where possible, to current applications in industry. It is particularly valuable if these take account of new industrial developments. Opportunities need to be taken in any subject – not only those concerned with science and technology, though these are the obvious areas in which most progress has been made so far. Action in this area can involve joint projects between schools and particular companies, and local cooperation between teachers and people from industry to provide information and teaching aids. A number of national organizations can provide assistance.

Able pupils

As I have already said, manufacturing industry needs to recruit able young people with relevant qualifications. The part careers advice can play in helping them to consider careers in industry deserves particular mention. Young people who are capable of getting good qualifications in further and higher education do need to be given opportunities, while they are still at school, to develop interest in industrial careers and the courses that can best lead to them. This involves giving them a feel for the sort of work done in industry particularly by people in the higher-level jobs which they will be able to aim for after gaining their higher qualifications. The level of job is important. As the then Secretary of State for Employment pointed out last autumn when he addressed the Institute of Careers Officers, it is no good showing a potential graduate design engineer or production manager the sort of jobs in industry open to sixteen-year-old school leavers. Efforts must be made to show these pupils the interest and challenge of higher-level jobs, so that they may be motivated to take suitable subjects at school and relevant courses.

Certainly, it would not be right to set out simply to steer all able young people into industrial occupations. But there is a big job to be done in providing opportunities for their interest to be stimulated. Too many young people fail to consider responsible, well-qualified jobs in industry because of a lack of first-hand understanding of what such work involves. We must certainly get away from any idea that because a pupil is heading for higher education, careers advice in school is a low priority or not even needed. There are signs that schools and the careers service would like to make more provision in this area, and it is important that staff are given the time in which to make the neces-

sary arrangements. This may be an area in which some pump-priming resources from government would be justified in order to get more programmes established.

Concern about numbers of qualified engineers

Much of the responsibility for our future industrial performance will, as I have said, rest on people with engineering and other technical knowledge and expertise. Justifiable concern has been expressed about our low level of output of people with qualifications in this area. In 1976, admissions of home students to university engineering departments were still lower than they had been in 1968. Over the same period, the proportion of admissions accounted for by overseas students rose to more than 22 per cent. In the past two years, admissions of home students to engineering departments have been more encouraging and we are now seeing an improvement over 1970 levels. However, it is worth remembering that the output of mechanical, electrical and production engineering graduates has fallen well short of the number needed to compensate for the much lower supply of HNC/HND engineers since 1970. The recent signs of encouragement are no justification for easing up on efforts to promote industry, engineering and technology among capable young people.

In recent months the DOI has been developing closer contacts with the Association of Graduate Careers Advisory Services (AGCAS). Careers officers in universities and polytechnics are in a key position to observe those qualifications and personal qualities of students for which there is a strong demand among industrial and other employers. They can see that the supply of good graduates in engineering, technology and associated disciplines is tight in relation to current demand from industrial companies interested in graduate recruitment. There is also a potentially greater demand for the same sort of graduates. AGCAS has just completed, with financial support from the DOI, a survey of the attitudes of small manufacturing firms to the idea of employing graduates (and the attitude of graduates to working in such firms). This survey indicates that small firms are mainly interested in technically qualified graduates who can bring in particular knowledge and expertise to help the company. Small firms that do not yet recruit graduates but who might begin to do so confirmed that it was this type of graduate in which they would be interested.

It does seem important that the information about graduate career opportunities acquired by careers and appointments services in higher education should be fed back through the education system so that pupils, teachers and parents can take account of it when A-level subjects and higher courses are being considered. Information about courses and career prospects should be as readily accessible as information about the courses themselves. It seems necessary to provide careers advisory services with more resources, not only to develop their information role towards schools and others but to enable them to provide more opportunities for undergraduates themselves to get a better feel for the sort of work done in industry. 'Introduction to Industry' courses, which are provided on a limited scale by a few companies, the Careers Research and Advisory Centre (CRAC), and some individual careers advisory services, are already much appreciated by students themselves as well as contributing to national needs.

The DOI Industry/Education Unit

The new Unit brings together the Department's interests and activities relating to education, some of which – in the field of schools, engineering and technology – go back ten years.

The Unit is able to offer modest financial support to help in getting

suitable action started quickly. Its main criteria are that assistance is only given towards specific programmes or initiatives that directly contribute to the Department's objectives; applications must be in respect of additional effort; it contributes to costs rather than meeting the full expense; and its assistance is of a pump-priming nature, so that after the period of support the activity is continued with the full costs being met from more regular sources.

It has made special provision for one important purpose. The sum of £100,000 over three years is being provided through the Standing Conference on Schools Science and Technology to help develop the existing and potential SATROs. It would like to see SATROs grow in number and extend their role beyond science and technology so that they help teachers – in cooperation with local industry – to communicate the importance of wealth creation and a wider understanding of how industry works to achieve success.

The Unit is providing assistance to encourage a growing number of activities, including the technological programme for schools organized by the British Association for the Advancement of Science; the 'Science in Society' project of the Association for Science Education; the 'Opening Windows on Engineering' project, which enables young professional engineers to talk in schools about their work; the project organized by the Royal Society, the Association for Science Education and the Council of Engineering Institutions which is producing information about practical applications in industry for teachers to use in science and mathematics lessons; the providing of funds for five additional 'Teacher Fellowships in Engineering' organized by the Institutions of Mechanical and Electrical Engineers; the Unit is also helping universities to organize workshops for sixth-formers to let them see work in a university engineering department and the work of engineers in manufacturing industry; and supporting 'Introduction to Industry' courses for undergraduates and sixth-formers organized under the CRAC 'Insight Programme'.

Naturally, its resources are limited, and it has to be selective in the activities it supports. It concentrates on manufacturing industry because that is the area for which this Department is responsible and where there is an urgent national need to strengthen our performance. Cooperation between education and industry has accelerated significantly over the past two years. But there is still an immense amount to do, even about the limited objectives referred to in this article.

Trends 1979/2

Schools and work: a curriculum enquiry in Cheshire

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It has undoubtedly been a strength of the education system of this country that it can reflect many different philosophies and exist within a framework that allows it to develop local variations and strong points, but in times of doubt this situation can lead to an apparent confusion. The recent upsurge of interest in education, from many different directions, is to be welcomed as a challenge and an opportunity to take us forward. It is important, however, that the variety of voices now to be heard speaking for or about education can be given a structure within which they can be orchestrated. In times of insecurity it is all too easy to become negatively critical. Our schools have the means of providing a focus for the expression of our interest in the future of this country and its young people.

Schools and the future

We are surrounded by predictions of such a variety and kind that many teachers feel insecure and uncertain of how to plan to help the youth of today to face a future of inevitable and rapid economic and social change. Many people look to the schools to provide a secure base from which the young can prepare themselves to face such a future, in a world that must seem both intimidating and exciting. Nowhere is this more true perhaps than in relation to the world of work. Although many would, no doubt, hotly deny that society looks to its schools to train the young to fulfil the economic roles this country needs to maintain its wealth and position in the world, it is nevertheless true that society *does* expect its schools to be aware of the country's professional and industrial needs and to do something about them. This has been made abundantly clear in recent months when attention has been focused on our schools from many quarters, and questions have been asked as to how the curriculum in schools is indeed preparing young people for the immediate and known, and also for the more distant, less known, future. What has sometimes appeared to schools as a lack of understanding of their roles and problems has made them take a defensive stance, while their real wish was to be helped to reappraise constructively their provision for pupils' present and future needs.

Existing links with industry

Already in many parts of the country – including Cheshire – long-standing schemes for links with industry exist. These are organized at county, district and local level as well as individually between schools and local industries. Often, however, links between schools and industry have been seen as additions to the basic curriculum work rather than as an integral part of what is taught and learned.

Curriculum reappraisal

For the past two years, Cheshire, along with four other LEAS – Hampshire, Lancashire, Nottinghamshire and Wigan – who have each developed their own means of appraising the curriculum, has been taking part in a partnership between HM Inspectorate, LEAs and schools to look at all aspects of the eleven-to-sixteen curriculum, using the HMI Working Papers* as an initial starting point. This reappraisal has been based on the definition of the curriculum as 'that which a school intends', and it therefore includes what has traditionally been called 'extracurricular' activities, as well as those shown on the timetable.

The curriculum is being examined under the broad divisions of: 'the provision for the development of the individual', 'the preparation of the pupil for society', 'the preparation of the pupil for the world of work', and 'the provision for the development of the pupil in personal relationships'. This framework enables the school to establish a means of self-appraisal, and, at the same time, gives others concerned with the school an opportunity to state their views in a way that can have value and be the basis for productive discussion. Generalizations and statements made without relation to a structured context can often lead to misunderstanding. Our hope is that the framework within which we have been working will prove helpful in providing a focus for the comments and views of all those interested in a school's work, as well as helping them to understand what it is that a school undertakes within its curriculum.

Basis of the enquiry

The structure for the reappraisal of schools' 'provision for the preparation of the pupil for the world of work' in seven schools in Cheshire consisted of three basic papers. These were mainly in the form of questionnaires developed by the members of the partnership, which were not only intended to allow the schools to debate what their intended provision was in terms of the curriculum and other activities, but which also required them to discuss the emphasis placed upon the various aspects of that provision.

The first paper examined the general framework provided by the school. It looked, for example, at the ways in which the school's policy set out deliberately to promote the pupils' interest in, and understanding of, the world of work; at what organizational structure there was; at what measures the school had for responding to the differing career perceptions and needs of pupils; and at what the school's explicit and implicit policy was for preparing pupils to work in an industrial society as well as preparing them for possible unemployment. It asked them to look at their policies for involving parents and governors as well as industrialists in their discussions and thinking, and in the actual contents of the curriculum.

At the same time an attempt to look at the knowledge teachers have of industry revealed many more ties with and experience of industry, at various levels, than is generally supposed. About one-third of staff in schools had valuable experience and knowledge of industry, and this could be of importance in the school's work. What was clear was that few schools exploited or used that experience in any systematic or significant way.

Subjects

The second paper explored the possible contributions of the various subjects. In what ways do the subjects in the school's curriculum

* *Curriculum 11–16. Working Papers by HM Inspectorate: a contribution to current debate.* Department of Education and Science, 1977.

promote interest in, and understanding of, the world of work and develop skills and attitudes appropriate to pupils' and employers' needs? Once a detailed examination of the subjects' contributions across the eleven-to-sixteen curriculum had been made, it became very clear that much is already being done in schools to heighten pupils' understanding. It is even more obvious that many subject disciplines have a far greater potential contribution to make when teachers are given the time and opportunity to analyse their work in this amount of detail. Of much greater significance, however, are the contributions the various subjects make to the development of those skills and attitudes that are appropriate and relevant to the world of work – for instance, language skills, independent study, reasoning skills, the ability to work – sometimes alone and unsupervised, at other times as part of larger grouping – adaptability and the development of perseverance, reliability and self-discipline. Coordination of these contributions across the curriculum could perhaps make pupils more aware of their significance and importance, not only to the development of their personal skills, but also in terms of career and employment opportunities.

Careers

The third paper looked at the careers education and vocational guidance provided by the school through the subject disciplines as well as through any specific careers work, links with industry, work visits, work-experience schemes, and through the use of employers, trade unionists, and parents as speakers, advisers or consultants.

Employers' views

These three papers, studied, debated and answered by all members of staff, gave the schools a base-line and an overall view of their current provision and intentions and opened up possible new ways in which cooperation and help could be achieved. At the same time, a group of employers provided help by looking at the same set of papers and they extracted from them what they agreed to be the relevant sections. They undertook to discuss and answer, within their own organizations, relevant questions from each of the three sections as they applied to an agreed grouping of possible employment, arranged under the headings 'unskilled', 'semi-skilled', 'craft/clerical', 'technician/supervisory' and 'technologist/management'. The importance of this work so far lies not so much in the actual answers given – interesting and revealing though these proved to be – but in the dialogue it made possible between schools and employers. Because they were working within a mutually agreed framework, with terms of reference understood by each, it was possible to develop greater understanding and to cover a wider range of ideas and topics of mutual concern than had hitherto been possible.

Results

The curriculum reappraisal brought out the following points:

1. Much is being done already in schools, but this tends to be implicit and uncoordinated rather than explicit – this includes the total experience of staff in industry not fully exploited by schools. (In the schools involved in the project, means are already being adopted to remedy this.)
2. Public examinations and other demands on the schools place more emphasis on written work than they do on skills in discussion, debate and oral presentation of reasoning and ideas. Although some employers stress the need for writing skills for technicians and potential managers, there is a strong demand for

clear and capable communication in speech 'across the board,' and particularly for unskilled, semi-skilled and lower supervisory grades.

3. Both schools and industry see the need to know much more about each other and are actively seeking the means to achieve this through work experience, teacher secondment, school/industry liaison groups, and involvement of employers, either directly or through representation on governing bodies, in discussion of priorities in the curriculum.
4. The schools have spent a number of years and a great deal of time in developing schemes of work appropriate to the least able, but this still remains an intractable problem. Employers also find it difficult to be precise on the range of demands that would be made on this group in employment, and about how they felt the schools could best prepare these pupils.
5. The overriding stress from employers is, without ignoring the need for basic knowledge and information, on the skills and attitudes that underpin the day-to-day work in the curriculum.

As a result of the curriculum appraisal, the staff have held a conference in each of the seven schools taking part to discuss what has been achieved and revealed in the work to date. In these discussions they were joined by employers – many of whom were already known to the schools and many of whom had also joined in the employers' group described above. The sense of partnership that is, or should be, at the heart of education was demonstrated here as enjoyable and inspiring.

Trends 1979/2

Doing a Trident: coordinated work experience schemes

John Kerry
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Most teachers are encouraged to arrange work experience out of school as part of careers preparation for pupils in their last year of statutory schooling. The permissions and constraints are set out in the Education (Work Experience) Act of 1973, and the desirable aims of such schemes are well documented. Many teachers who have experience of running work-experience schemes feel that what often began as an enhancement in ROSLA courses should be extended to pupils of all abilities in the sixteen-to-nineteen age group, and they would like to arrange this.

However, organizing work experience out of school is an arduous task, as those who have done it well know. The legwork involved in making contacts and persuading people to take part or just allowing it to happen are daunting. The documentation required to control and supervise a scheme when it is running can prove back-breaking for an organizer who has only part of the working week to spend on it.

Problems multiply when several schools in the same locality compete for opportunities with the same employers. A centrally coordinated scheme soon becomes imperative.

Essential coordination

Project Trident supplies the essential coordination for work-experience schemes and, during the past six years, 'doing a Trident' has become the casually succinct way that young people refer to their work experience in the twenty-one areas in England where Project Trident schemes are currently operating. In each of these areas, the Trident Trust has arranged for a coordinator to be seconded from a local or national firm to work full time at organizing work experience for young people. This coordinator acts as a single point of contact between all secondary schools and all employers wishing to take part in the scheme.

With secretarial help, in an office provided by the LEA, the coordinator sets about compiling a manual of job descriptions of opportunities for work experience. A full range of local opportunities is essential to the success of the scheme and jobs are sought in manufacturing industry, service industries such as banks, shops, hotels, restaurants and garages, and in the public services such as local government, health, gas, electricity, water and transport authorities. Each job has to be fully described. To do this, the coordinator may have to sit down alongside the personnel officer of a firm and work out the job description with him in terms which have meaning for pupils in the schools. The description will also have to attempt to specify the qualities a pupil needs to have in order to benefit from the experience offered, the type of clothing required and so on. The manual of these job descriptions is then duplicated, and copies are given to careers teachers in the schools.

The coordinator also makes contact with all the people who may be helpful in running the scheme, or who may raise objections if they are not informed at an early stage. These contacts include local trades councils, the chambers of trade and commerce, the regional Confederation of British Industry (CBI), HM Inspectorate of Factories and Offices, and the local Department of Employment. Within the local authority itself, the coordinator seeks ways of working closely with the careers service, social services, community and youth services.

In all this work the coordinator has a persuasive role only; but as an independent agent working alongside rather than within the education authority. A Trident coordinator enjoys a certain freedom of action in this process of persuasion that someone within the authority might not enjoy to the same extent. As a former manager in industry or commerce, the coordinator may also be able to approach opposite numbers in industry more effectively than could someone from a school.

Advantages of Project Trident

Employers and schools quickly learn the advantages of the Project Trident operation as compared, say, with arrangements made between individual schools and local firms. By dealing directly with the Trident coordinator, employers are spared numerous approaches from schools, and all schools get a full range of local jobs offered instead of the more limited range they could find for themselves.

With the coordinator as the keystone in the bridge between the schools and the firms, a straightforward system of paperwork provides for the necessary documentation, control and supervision of the flow of traffic across the bridge. Using the job description manual, and with the help of the careers tutor, pupils match themselves to the opportunities.

For Daren in Sheffield it went like this:

> 'I went up to the careers room one dinner and our careers teacher gave me a big folder to look through. I looked through right to the end and the last one was display work, and I always dreamed of working in windows. So I picked this job and put my name down for it. I was lucky to get this job and I worked for three weeks at a big multiple store in Sheffield. . . . And now I hope to have full employment at the store when I leave school'.

For Daren it was as simple as that.

There had, of course, been much more to the arrangements than that. 'Putting his name down' meant filling in a job selection form with his personal details and three choices of job. His application was then processed at the Project Trident office where NCR forms provided, at one typing, the allocation of job (usually the first choice); agreements for pupil, parents and employer to sign; a reminder form to jog memories when the time for work experience approached; and forms for feedback of information on how the job had worked out from both pupil and employer at the end of the work period.

Wide choice of jobs

In Peterborough the Project Trident job description manual has grown in two years to a thickness of more than three inches, and it contains over 500 descriptions of jobs available in 250 different firms. Since many of these jobs are available up to six times a year on a calendar which the coordinator has worked out after consultation with teachers and employers, currently there are 2,500 work-experience opportunities open to Peterborough schools. During the school year ending July 1978, over 1,200 pupils were offered work experience of three weeks' duration in that area. The average in other Project Trident areas is lower, but during the last school year in the nineteen operating areas, 11,700 opportunities were taken up by 350 schools in 2,500 firms. In average terms this means that a coordinator expects to be able to offer up to twenty schools fifty work-experience opportunities each throughout a school year. At the moment, of course, some schools make greater use of this service, sending out a high proportion, if not the whole, of the fifth year, and some do not use it at all.

It has been said that in some parts of the country employers have been unable to satisfy schools' demands for work experience. In areas with a naturally healthy supply of jobs, over-demand most commonly occurs where schools approach employers separately with requests for opportunities of varying kinds – for a half-day or one day a week throughout a term or the school year; or continuous periods of one, two or three weeks at times that suit every school's examinations calendar. (This results in attempts at mass exodus from schools into local firms during June and July when employers, because of staff holidays, may be quite unable to provide adequate supervision.)

In Trident schemes all the job opportunities are for three continuous weeks at set periods in each term, and it is perhaps no coincidence that there are, at present, many more jobs than pupils to take them up. It takes courage and conviction for teachers to allow fifth-year pupils out of school for three weeks when they are preparing for examinations; but a period of three weeks is needed to fufil the educational aims of the exercise. It takes that amount of time for the young person to settle into a strange environment, accept the routines and disciplines, make proper working relationships with fellow workers and supervisors, learn to do a worthwhile job adequately and enjoy a full sense of

achievement in being a productive and responsible member of a working group.

Improved motivation

Fortunately evidence accumulates quite quickly that the improved motivation of pupils from work experience more than compensates for their absence from the classroom. A fifth-year girl worked in a chemist's shop and reporting back said:

> 'I realised that one of the qualifications I would probably need more than any of the others was biology. At the time I was just about supposed to have completed a biology project. Well, my file was empty. I hadn't done any. I wasn't interested at all. Coming off the work experience really drove it home that the CSE project was really necessary. Also I received a lot of very important leaflets on skin care and make-up and other things about the body and personal hygiene and everything. This was what my CSE topic was on, personal hygiene, so I'd got a start really. So this helped a lot and now the project's finished like it should have been a year ago'.

That girl was confirmed in the job she had thought she wanted to do when she left school; but work experience just as often changes someone's mind, and is possibly all the more valuable an experience for doing just that.

Teacher visits

When work experience is fully integrated into the schools' careers preparation programmes – as it is, for example, at Crookhorn School in Hampshire and at Clifton School, Rotherham – it is possible from the reporting back of individual pupils to build up a full picture of local career and occupational opportunities during the course of a year. Teacher visits are an essential part of a scheme, all pupils receiving at least one visit from one of their teachers at their place of work while on work experience. In this way schools are acquiring a much more detailed and useful knowledge of the workings of local industry than they ever had before, and many teachers have come to feel that this manner of learning about industry and commerce through the experience of their pupils makes more sense in every way than taking time off to work in industry themselves.

Accounts by pupils of their work experience teach us all a great deal of what we need to know and should always remember about young people of this age. Going to work on a Monday morning instead of going to school can be a nerve-racking experience:

> 'I felt funny wearing everyday clothes when the other children and teenagers on the streets were wearing their school uniforms. The fact that I was going to work still had not quite sunk in until it was time to go. All I could think of was, What if I don't like the job? What if they don't like me? What if I don't like them? Thousands of virtually silly doubts flooded my mind, but it was too late to turn back. I was there'.

Treated as adults

The majority, almost everyone in fact, soon settles in. They find the longer hours tiring for the first week, but from the start they enjoy the way they are treated as adults and equals among the other adults in the office, shop or factory:

> 'I gained experience in what it is like to work with other men, all older than me. They were very helpful and showed me how to do all these jobs. They showed me how to "clock in" and "clock

out" and how to take instructions without making me feel as if I were the youngest there'.

'I was a bit lost at first. I didn't know if I was doing the right thing all the time and I was a bit shy. But after that I got over it because people were so helpful. They didn't tell me off if something was wrong. They just put me right. . . . When the first week was over I thought, "I've done it". I didn't think I'd be able to manage it but I did. I felt it was something good'.

Time well spent

Back in school some pupils have impressed their teachers with the new interest they show in school work and the need to pass examinations. When placement is sensitively arranged the three weeks out of school has not been time lost. Often it has been time well spent in discovering how what is learnt in school may be applied in the world of work, and how much more may need to be learned in school or further education college in order to qualify for a particularly desired job. Teachers have remarked:

'When they came back from their work experience they were more adult and reasonable. They were more self-confident and considerate'.

'All students made up for academic work missed, and no adverse examination results attributed to time spent on work experience have been noted'.

'The pupil branded by us as "remedial" was described as potentially the best mechanic his employer had seen for years. One of the most troublesome girls in the school was described as "the model employee"'.

'They had grown up over three weeks. One boy in particular who seemed to have lost his way in school, the school work seemed to have no relevance at all, he went out to a job of his choosing and came back very motivated and has worked hard at all his subjects, mathematics in particular'.

Some parents were also impressed by the changes in sons and daughters:

'It increased her self-confidence. It was a valuable experience of dealing with people different from herself. She developed an ability to stick it out in difficult and unfamiliar situations'.

The response from employers, who are often said to be most critical of schools and the young people produced by them, is sometimes the most encouraging of all the responses coordinators receive. Quite often employers say that they did not know schools still turned out youngsters of the quality of those they had on work experience.* They were pleased to be in the scheme because they were getting to know more about schools and about young people of fifteen and sixteen. Some employers said that in future they would consider employing sixteen-year-olds instead of eighteen- or twenty-year-olds as they had been doing in the past.

Current projects

Trident Projects are at present operating in Hampshire, Leeds, Thurrock, Crawley, Darlington, St Helens, Corby, Milton Keynes, Enfield, Dorset, Rotherham, York, Peterborough, Doncaster, Sheffield,

* The selection process tends to prevent some schools from sending their more troublesome pupils, however.

Hounslow, Luton, West Essex, Lothian, Havering, and West and East Cheshire. Early in 1979 Projects will be opening in Brent, Barnsley, and the Inner London Education Authority.

Trident Trust is a totally independent charitable trust and so far has received no funds from Government. It is now the intention of the Trust to hand over responsibility for the older-established projects as soon as local resources can take charge and bear the cost. This will enable the Trust to continue to accept invitations from other LEAs to set up new projects. There are a dozen requests in the pipeline and Project Trident looks forward to making a further substantial contribution, in the most practical way possible, to improvements in understanding between schools and industry.

Further information on the procedures for setting up work-experience schemes is available from:

Trident Trust
11 York Terrace East
Regents Park
London NW1 4PT
Telephone; 01–935 1206.

Trends 1979/2

Industry matters?

Angela Arthur
Formerly Management and Training Adviser, The Industrial Society

Industry matters, or does it? The impression given by senior pupils and teachers in a recent essay competition run by the Industrial Society and *The Guardian* is that it does not, or if it does it should not, and they certainly do not want anything to do with it anyway.

In his essay one student carried out a survey into sixth-formers' attitudes to industry. Comments received from the fifty boys ranged from 'disorganized and inefficient' to 'boring, laughable'. Issues that were raised included overmanning, lack of investment, redundancies, and the never-ending conflict between management and unions. Many claimed industry would be the last place they would consider when choosing a career.

Those students for whom a career in industry was unavoidable thought they would be destined to be 'incarcerated in an impersonal machine' with no job satisfaction. Industry was certainly 'no place for bright school leavers'! It would provide 'a job without status, only for the lower classes, not for girls and one of mindless monotony'.

This harsh attitude towards the world of industry and the almost complete disdain for its activities is also reflected in the attitude of teaching staff. Industry was described, for example, as 'a dirty world inhabited by non-people, horny-handed, discontented, unambitious sons of the shop-floor, a grim world of factories and dehumanization'.

Why does industry suffer from this bad image? Why is it that so many young people today see industry as a 'rat race polluting the environment', and as 'the unethical exploitation of the unwilling'; why do they view commerce as 'the unacceptable face of capitalism'? Why do they believe industry to be motivated only by greed, personal gain, and the worst forms of materialism? Is it not possible to have a

sense of vocation for industry? Students perceive the worth of professions such as teaching, medicine and the social services but fail to recognize that the distribution of wealth depends first and foremost upon the creation of wealth, and that this wealth can come only from the labours of industry and commerce.

Industry's image

The media do not help industry's image – headlines so often talk of industrial strife and disputes, and dramatize conflict and confrontation. In the words of a young student, 'the image of British Leyland hangs over the whole concept of a job in industry'. The media, however, surely cannot be the sole factor responsible. The education system, teachers, local education authorities, parents, industry itself – are all involved in emphasizing the bad image that industry has gained.

If this attitude cannot be modified or corrected, a vicious circle will continue to obtain that will speed the decline in our industrial performance and become increasingly difficult to break. Something has to be done now and the question is, what and by whom? The vicious circle of low esteem can be seen as follows:

Ignorance of industry

The real answer to the question of industry's bad image can, I believe, be summarized in one word – 'ignorance'. One sixth-former said. 'How can I be expected to devote my working career to something I know nothing about?' The sixth-form survey mentioned earlier revealed that 'the cynicism was born of ignorance' and the almost universal answer to the question of 'what do you want from industry?' was knowledge. Another student commented that no-one had tried to win her interest or stimulate her imagination to help her view industry as a possible career.

If the vicious circle of low esteem is to be broken, the gap in the knowledge of these young people has to be filled. It is not solely the responsibility of the schools, nor is it solely the responsibility of industry, nor is it the fault of either party that this gap exists. Schools

have been educating, and industry has been concentrating on putting its house in order and getting the goods out of the door. If industry is to obtain the quality of recruit it requires, in the words of one sixth-former it 'must be prepared to fight for them'. Another student issues a challenge to industry to 'show us your acceptable face'.

However, as indicated earlier, schools and industry have a joint and crucial role to play. This responsibility over recent months has become well recognized and much has been written and said on the subject,* perhaps sparked off by the Prime Minister's speech at Ruskin College, 18 October 1976, in which he stated that:

> 'We need more of our young people as manufacturers and engineers who can design the best product, produce it and deliver it efficiently and market and sell it, especially abroad in the face of tough competition'.

Many organizations and bodies are now involved in the encouragement of education/industry liaison, ranging from those offering linkage in a specific field, such as the 'Schools Information Centre on the Chemical Industry' and 'Opening Windows on Engineering', to schemes that provide young people with the opportunity of experiencing the world of business. 'Young Enterprise', for example, is a scheme that provides opportunities for older pupils to set up and run their own miniature business with financial help and technical advice from local industry.

'Challenge of Industry' conferences

A further successful method of bringing together those who work in industry and commerce with those who are questioning the purposes and methods of productive industry is the Industrial Society's 'Challenge of Industry' conference. These two-day conferences were first organized over fifteen years ago. Nine hundred have now been run, involving tens of thousands of young sixth-formers and thousands of young managers.

The conferences are designed to show the essential part industry and commerce play in the creation of the nation's wealth, to show industry's need for able young people to tackle its problems and thus make a contribution to economic prosperity, and for a positive and open-minded attitude towards industry. The conferences also seek to illustrate that in a free society management should act by persuasion and consent, understanding and accepting the right of employees to have their interest represented by trade unions. Additionally, the two-day conferences are designed to foster a closer relationship between schools and industry.

The conferences are highly participative, with the pupils being divided into discussion groups of ten, led by a young manager or a union representative. The groups are asked to produce solutions to actual management and industrial relations problems. Even without work experience, the pupils begin managing and begin representing

* See *Education in schools: A Consultative Document*. Cmnd. 6869. London: HMSO, 1977.
Industry, Education and Management: A Discussion Paper. London: Department of Industry, 1977.
Speeches by James Callaghan, 18 October 1976, 27 October 1977, and 26 January 1979.
Seminars at St George's House, Windsor Castle.
Design Council reports – *Engineering Design Education*, 1976, and *Industrial Design Education*, 1977.
British Association report – *Education, Engineers and Manufacturing Industry*, 1977.

people in industry by hammering out solutions to problems with the help of their group advisers. Case study work is supported by talks in plenary sessions given by experienced senior managers and union officials on the respective roles of management and unions.

Teacher involvement

Involving the pupils is not enough. The commitment of teachers is vital if effective schools/industry understanding and cooperation is to be achieved. Consequently, as a development from the 'Challenge of Industry' work, conferences have been organized for teachers and student teachers. These conferences consider the relevance of industry to the teaching profession and what action can be taken to improve education's understanding of industry and industry's understanding of education. They aim to provide answers to the latter by asking those in charge of existing schools/industry liaison schemes and projects to address conferences.

Although many schemes are in operation, and numerous organizations have been set up, so much still needs to be done if the quotations from young people and teachers used throughout this article are at all representative. There can be no greater challenge than to bring to the next generation an awareness of the virtue and value of industry.

The following checklists have been drawn up to help those in education and industry to see at a glance how they might go about promoting liaison in a practical manner.

Action by industry in schools

Industry can

- provide material that can be used in the classroom for practical projects to help young people understand how industry works;
- send young managers and trade unionists to talk in schools and at conferences such as 'Challenge of Industry';
- pursue contacts with schools after such conferences and assist in career choice activities irrespective of the company's own recruitment needs;
- consider twinning and resource-sharing with local schools, and nominate certain members of staff to liaise with teachers in specified secondary schools;
- welcome parties of fifth- and sixth-formers as visitors, to demonstrate industry at work, having briefed a teacher carefully beforehand about the objectives of such a visit, and involve a member of staff in de-briefing;
- report back to the local school on the progress of ex-pupils recently recruited into training schemes;
- provide opportunities for teachers to obtain practical experience of working in industry;
- offer available resources as practical teaching aids – for example, machinery, off-cuts, and computer time;
- organize a conference about the challenge of industry for teachers at a school, involving senior managers and trade unionists.

Action by industry in universities

Industry can

- identify the areas where help is needed and the people who need it most;
- strengthen the links that already exist by a detailed examination of the structure and subjects taught;

— give other help where possible, by providing lecturers, speakers, sharing resources, and so on;
— assist with the development of a University Industrial Society and provide practical assistance with speakers, arranging visits, printing programmes, advertising in magazines, and so on;
— discover who is on the Careers Advisory Board from industry and talk to them about action;
— involve graduates in liaising with universities and get them to write about the challenges and rewards of working in industry or commerce.

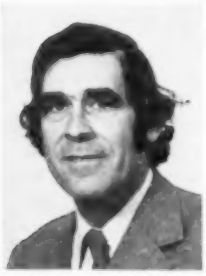
Action by schools

The key to greater understanding lies above all with local initiatives. Schools can

— establish a local schools/industry liaison working party involving staff from a range of disciplines;
— through head teachers, use every opportunity to meet regularly with local senior industrialists (e.g. through Rotary Clubs, Chambers of Commerce);
— invite local industrialists into the school at every opportunity on a regular basis, with as much involvement in the management and activities of the kind as is feasible – for example, industrialists on the Board of Governors, giving prizes at speech days, sports days;
— recognize curriculum development as being an essential long-term requirement;
— involve local industrialists in examining the part of the present curriculum that is relevant to the range of skills they will be requiring (see, for example, the Engineering Training Board's booklet describing the type of mathematics required in the workshop);
— investigate national schemes available to aid curriculum development (e.g. Schools Council Industry Project, O- and A-level syllabus on understanding industrial society);
— integrate 'Challenge of Industry' conferences into the annual curriculum organized by the school, staff, or students themselves;
— be aware of the fact that extracurricular activities provide a great deal of scope for schools/industry liaison;
— invite local industrialists to give talks, and demonstrate their products, to all age groups of pupils. Use all levels of industrial representation, from apprentices to managing director;
— organize job visits to local factories, integrated into a planned programme of events;
— consider approaching companies to share their resources (using computer equipment, say);
— make as much use as possible of project work and literature produced by companies;
— investigate organizations that specifically promote schools/industry liaison;
— provide work experience for students and teachers ranging from a few days to long-term secondment for teachers. (The CBI offers schemes, as do many LEAs);
— consider making use of 'Project Trident', 'Young Enterprise' and other such schemes.

*Links with local industry: the work of one SATRO**

Peter Dutton
Liaison Officer, Sheffield Region Centre for Science and Technology



Brian Harris
HM Inspector

In September 1970, the Sheffield centre was the first of the Regional Centres of Science and Technology to be established with a full-time staff. This followed national discussions in the Schools' Science and Technology Committee under the chairmanship of HRH The Duke of Edinburgh, and among those responsible for the Schools Council Project Technology. The initial brief was to investigate ways of providing help to teachers of computer education, technology, crafts, mathematics, science and (later) careers, and to assist in disseminating information to and from industry, schools, and higher and further education. Close liaison with HMI and LEA advisers has been a feature throughout the work of the centre.

In the first four years, the Sheffield centre concentrated on several curriculum development projects and made industrial contacts only where necessary. Most of these contacts concerned the distribution of surplus equipment, materials and apparatus from industry to schools. In 1973, the liaison officer directed a Department of Education and Science/Area Training Organization (DES/ATO) course on 'Science in an industrialized society' and organized a joint industry/education conference on the 'Effectiveness of modern science teaching'. Although more than sixty people from schools and FE attended, few people came from industry – a circumstance indicative of the attitude industry adopted towards liaison at that time. Following from the conference, though, a Sheffield Science Teachers' Resource Directory was published in January 1975; it listed fourteen industrial contacts in biology, sixteen in chemistry and eighteen in physics. This directory is now out of date and out of print, and a South Yorkshire Resource Directory was published in March 1979 listing help available in several different forms from fifty-four local industrial concerns.

Early in 1975, the executive committee decided to change the main policy of the centre. The emphasis of the work was to be on liaison between schools and industry/commerce, and the growth in these activities is illustrated in the bare statistics of the liaison officer's work given on the next page.

Strengthening contacts with industry

Before developing any particular form of links between schools and firms, the centre had to build up a wide network of industrial contacts. During the academic year 1975/76, the liaison officer met more than 200 people, including managers, scientists, training officers, engineers, shop stewards and trainees, in forty-five different organizations involved with steel, mining, chemicals, electricity generation and distribution, electronics and engineering as well as the National

* Science and Technology Regional Organization.

	Number of visits to schools and colleges	Number of visits to industrial firms	Number of meetings	Proportion of time spent on education/ industry liaison (per cent)
1978	46	63	109	65
1977	57	66	108	60
1976	40	79	86	40
1975	53	35	110	
1974	47	16	100	
1973	35	21	130	
1972	60	18	70	

Health Service and several unions. To decide the potential usefulness of the contacts, he asked these people to describe their work and the satisfaction they gained from it and for any ideas they had for transmitting this information to teachers and pupils. Inevitably, comments were also received about schools and young people and their lack of awareness of the world of work.

This was not a formal piece of research, but many of the comments received were very illuminating. All the people interviewed included somewhere within their comments remarks about helping people, whether inside or outside their own organization. A very strong feeling came across on many occasions that people really did enjoy working in industry, despite its drawbacks. As one full-time trade union official put it: 'People wouldn't work without money but providing that is about right, the other conditions are more critical'. Of all the people interviewed, only two said that money was the main satisfaction they got from working. Of course, some people might have been giving the answers that they thought were expected, but in many cases this was checked, and people did stick to their guns and say that there were other reasons for working that were more important in their view.

Several young people – either in training or just qualified – said that money was the main motivation when they started work but this changed with increasing experience and responsibility. Industrialists were deeply concerned about teachers' and pupils' misunderstanding of the nature of industry. 'They ought to try to see the warts and achievements of industry. They should have the genuine opportunity to identify with industrial technology and not just assume that work in industry is, perhaps, a necessary evil,' suggested one manager. When challenged, industrialists acknowledged that they had not done enough in the past to 'balance' the view of industry which appeared (almost by default) in the press, and on radio and television. They also acknowledged that their lack of forward manpower planning was one good reason why some able young people rejected industry in favour of other employment.

Experience days for teachers

This picture of industry was totally different from that usually perceived by teachers, so during the academic year 1976/77 the centre organized opportunities for teachers to spend some time in industry. The Confederation of British Industry (CBI) scheme 'Introduction to industry' had been operative in the area for some years, but constraints on teacher time had restricted the annual numbers to single figures. Consequently, the question was asked 'Would it be effective

for teachers just to spend a day in a firm?' There was considerable scepticism about this from industrialists and teachers, but it was agreed to conduct a limited experiment. On eight occasions, a small group of subject teachers were invited to spend a day in a firm, not on conducted tours or to listen to talks on the structure and nature of the firm, but to observe the working life of a person in that industry for one day. Fifty-four teachers of craft, mathematics, science, English and careers were involved.

Discussions at the end of each day revealed that teachers acquired interesting insights into industry and, in a few cases, encountered interesting applications of their subject capable of immediate exploitation in the classroom. Three heads of science were so convinced of the value of this one day's experience that they wished to extend the scheme to provide an annual visit for each member of the department who had no previous industrial experience. Of course, not all teachers found the experience equally valuable; sometimes unforeseeable incidents, such as accidents or disputes, interfered with the normal pattern of work of the industrial employee, although these were sometimes turned to advantage. Predictably, the day was of limited value to teachers with previous knowledge of industry. The most important factor to emerge was that the teachers' interests and specialisms required careful matching with the likely work to be observed. Few teachers found immediate classroom applications for their experience but most found their prejudices strongly shaken and were surprised by, and frequently pleased with, their impressions of working conditions, variety of occupations, job satisfaction and the varied educational background and experiences of employees.

During discussions, teachers were, in turn, often able to rectify false impressions of schools received through the media – it seems that teachers are not the only people to suffer from limited experience. It is to be hoped that some continuing contacts have been established. Some LEA advisers, and even individual schools and firms, have since arranged such experiences for teachers, and the centre has given them advice and help in making contacts.

Student teachers

Also during the academic year 1976, a similar scheme for student teachers at Sheffield City Polytechnic provided thirteen first-year students with the opportunity to experience four days observing work relevant to their disciplines and interests. As with the teachers, the students found this brief experience interesting, enlightening, thought-provoking and occasionally devastating. They all asked to extend their experience later in their course and to be given the opportunity to devise a special industrial study. One industrialist commented that he had been amazed that so much could be achieved in such a short time. This experiment was continued during the academic year 1977/88, with a group of ten second-year students who for seven weeks spent a day a week in industry. In addition, six post-graduate students spent a day a week for four weeks in one of three firms. As a result of this (limited) experience, it has now been decided to include industrial experience within the BEd courses, initially as an option but possibly later for all students.

Currently, members of staff of the Faculty of Education are spending periods of three weeks full time in industry and commerce to build up experience and to help with the detailed planning of the student course. The centre has found industrial placements for all students and staff to date and has helped brief the industrialists about the purposes of the experiment. It is likely that this will continue to be

an important role for the centre because experience so far has shown the great necessity for careful and realistic preparation of industrialists as well as students if success is to be achieved.

Numeracy and school leavers

There have been many comments by employers and trades unionists nationally about standards of numeracy among school leavers, and the work of the Sheffield SATRO had attracted similar remarks about standards in this part of the country. Consequently, between November 1976 and March 1977, it organized a survey of 8 per cent of all employers in South Yorkshire and North East Derbyshire to discover the importance given to certain mathematical topics for young people taken into employment during 1976. The work was organized by Mrs N. C. Knox and published by the centre in May 1977. Eight mathematical processes were found to be most important for young men and women at work – the four operations with whole numbers, mental arithmetic, the measurement of length, the use of the metric system, decimals, weight, the use of tables and the measurement of area. There were considerable differences in the requirements made of boys and girls according to the jobs entered.

Following discussions with mathematics advisers, a working group of twenty-two mathematics teachers was established in October 1977 to prepare information for a further paper to describe in more detail the kind of mathematics required in employment. This paper will be published in the near future. Besides the actual preparation of this paper, all the members of the team that made visits to firms and collected the information reported that they had gained personally from the visits and would be able to use this (again limited) experience in their teaching.

Requests for help

Many requests for help and advice are received from schools or from individual teachers; over the years, the frequency has increased to its present rate of about seventy a term. Earlier on, most requests concerned project work and school technology, but now most are about contacts with industry. The centre does not deal with careers advice at all, so all requests are 'subject-based'. Some can be answered very quickly, others take a while to follow through. At present, all requests have been answered satisfactorily, although only in a few cases has there been any direct feedback on the efficacy of the industrial content.

One case where feedback has been very valuable came from a science department in a school which had developed a course for remedial pupils that included a number of visits to such places as a coal-mine, a sewage works and a farm. The staff noted the high level of interest produced and wished to extend the range of visits and to integrate them more fully into the rest of the course. The centre was able to provide the contacts and, in one case, to help in the briefing of the industrialist concerned.

For another school, the centre suggested names of industrial scientists who could talk about their work with third-formers. Two schools asked if the centre could arrange for a women engineer to meet more able third-form girls and, even as this article is being prepared, another request of this kind has just been received. The liaison officer has been invited by the headmaster of one school to address a staff meeting on industrial involvement in education, and two similar requests are outstanding. Over twenty schools have asked the liaison officer to talk in sixth-form general studies lessons; subsequently, in one case, he was asked to find a manager and a trade union representative from the same organization to put their points

of view. In another school, the industrial contact was found so that a more detailed study of an industrial situation (actually a marketing problem) could be undertaken by the students.

Help has been given in arranging three 'Challenge of Industry' conferences, and the centre, in conjunction with local branches of the professional engineering institutes and the Engineering Industry Training Board, has also organized an experimental course for sixth-formers on 'Professional engineering in industry'. The three-day course in school half-term was over-subscribed by four times. Not all the participants decided to become professional engineers (twenty-two out of twenty-eight did so) but all greatly appreciated the opportunity of getting to know young engineers now working in industry.

Headteachers

So far, three of the five LEAs have asked the centre either to arrange contacts for headteachers, to organize meetings for them, or both. Four such meetings – usually lasting a day – have been held, at which senior managers from industry explain their work. These have included a managing director describing the overall control of a company, a marketing director explaining how goods and services are sold, a senior financial officer showing both the necessity for financial control and something of the ways by which this may be achieved, and a personnel director describing the management of the most important part of an organization – the people. Each conference has been preceded by opportunities for the headteachers to visit particular firms, partly to meet industrialists before the conference but mainly to learn a little of the environment in which the senior managers work. On one occasion, the centre organized a 'reverse' day conference for senior industrial and commercial managers in which a chief education officer, a senior adviser and a headmaster described their roles within the education service. Arising from these meetings and from other initiatives taken either by the LEAs themselves or by individual schools, the liaison officer has been involved alongside the LEA advisers in discussions about how the better understanding of the nature of industry and commerce might be reflected within the school curriculum.

Coordination

In mid-1978, there was considerable pressure on the centre to 'co-ordinate' the rapidly growing number of initiatives linking schools and industry/commerce in the region. Most of the pressure came from industrialists who felt they might be swamped by these requests for help and involvement, but some came from teachers – especially headteachers – who wanted guidance as to the range of links available, so that the most appropriate could be used in each situation. It was felt that the centre could not take on a direct coordination role since this might impinge on the responsibilities of the LEAs and the schools, and might also lead to unwanted bureaucracy. Instead, in September 1978, the centre published a summary of all the links between schools and firms, whether organized by the centre or by other organizations. This paper summarized why there should be such links and then listed twenty-six different types of link. Appendices gave summaries of education and employment statistics in the region and a list of the organizations involved.

National links

The Sheffield SATRO is a member of the SATRO Panel of the Standing Conference on Schools' Science and Technology (SCSST) and, as such, has good communication links with other SATROs. Information and experiences are exchanged as well as more personal

contacts made. There are also links with teachers' subject associations, professional, scientific and engineering institutions, employers' organizations and unions as well as government departments. Some of these links are through shared membership of SCSST, others are formed directly with local branches of the relevant organizations.

SCSST has organized several conferences, starting in 1973 with 'Living with technology', held in Sheffield. More recently there have been four regional conferences on 'Strategies for change in a technological society'. This centre has been involved in one of these, held in Huddersfield in January 1977. The centre also did all the local organization for one of the Department of Industry 'Shaping tomorrow' conferences, held in Leeds in September 1978. This attracted over 400 delegates – half from industry and half from education – from all over Yorkshire and Humberside.

The future

One result of the 'Living with technology' conference was the formation in mid-1975 of the Sheffield Frontier Group. This consisted of about thirty people from industry, education, the church and the press. It has discussed a number of large technological issues, some of which have been taken up by the centre in its programme. As a consequent of one such discussion, the National Coal Board agreed to give the centre virtually unlimited access for educational purposes to documents and personnel associated with the development of the Selby coalfield. In return, the centre agreed to act as an agent for the Board in dealing with small non-routine enquiries from schools or colleges. A summary of sixteen possible topics for study was prepared by a retired engineer from Sheffield University. Five schools initially agreed to cooperate in exploring the enormous possibilities in this living case study, involving the nature of technology and industry and its impact on society. One school has prepared a unit of work for use in the second form, another for use in the sixth form, and the centre has collaborated with Yorkshire Television over the production of a unit of three programmes on the Selby coalfield within the series 'Making a living'.

In autumn 1977, the group reviewed its work and decided to tackle two different problems. One was the identification of and support for gifted children, and the other was the impact of microelectronics. In both cases, the groups have had talks to brief themselves, and have now started programmes of action.

Bridge and pathfinder

During the past eight and a half years, the Sheffield Region Centre for Science and Technology has shown that it can act as a bridge between the worlds of education and of industry and commerce and as a pathfinder in developing new ideas and techniques for more bridges. It is cost-effective because it operates with a very small staff (one man and a part-time secretary) and yet acts as a 'multiplier' by working through the talents and energies of the very many people associated with the centre. Given continuing financial support, it plans to continue to work with the other SATROs and many other organizations to widen understanding of technological developments and to foster balanced and responsible interaction between education, industry and commerce.

Trends 1979/2

'Young Enterprise' – a school/industry link

Valerie D. Ivison
Headteacher, Hope High School, Salford

For two decades or so, post-war education, as taught to teachers in training, was concerned with the development of individual potential – the fulfilment of self. In the 1970s this definition seems no longer adequate. The individual needs to relate to the society in which he lives and to contribute to the wellbeing of that society.

With the extension of educational opportunities for our young people, there has been a vast increase in courses of further and higher education. More and more of them have pursued the advantages they saw in joining the professions. They also recoiled from the increasingly bad publicity given to disputes between management and labour. Encouraged by their parents, our more able youth turned their backs on industry.

The schools of the comprehensive era, eager to prove themselves through their students' successes, encouraged this trend until industry began to complain that the youngsters joining their ranks were of declining quality and that standards had fallen. To some teachers it began to be apparent that unless a good proportion of our brighter youngsters entered industry there was a distinct danger that the economic requirements of an advanced educational and social welfare state would not be forthcoming.

It became necessary to broaden the curriculum to include a basic understanding of the world of work and of how our country earns its living and, at the same time, to encourage industry and the education system to close ranks so that each would develop a basic understanding of the others' needs. Initially, industry was suspicious and resisted overtures made by schools. Teachers made many efforts to learn more about the world into which they were to launch their pupils. They visited industry and invited their contacts back into the schools. The 'Teachers in Industry' scheme was launched, whereby a teacher spent two or three weeks in industry and work experience was made possible for some pupils. Thus, gradually, in certain areas of the country, relationships began to develop between schools and industry, and more and more teachers reassessed their aims as 'educating for an industrial and technological society'.

What is 'Young Enterprise'?

Within this context how could youngsters gain practical experience of business? There was the well-established simulation exercise run by the Chartered Accountants Association for bright sixth-formers who had embarked on A-level maths and economics courses. Gradually other organizations began to plan their own educational operations.

'Young Enterprise' began in the USA and has developed in this country in recent years. Its aim is to provide young people between fifteen and nineteen with the opportunity of learning about the organization, management and operation of a business by forming

and running their own company in miniature. It helps young people by giving them an understanding of the business world they are about to enter, or have recently entered. It aids them in their choice of career and in the development of their personal qualities of leadership, initiative and self-confidence. It helps schools by providing the means of putting across 'business methods' with professional assistance and it helps industry by presenting school leavers and young factory and office workers with the challenges that exist in business today – giving them a basic knowledge of what business is all about and creating the background for a better understanding between management and the shop floor.

How did Hope High School become involved?

As Hope High School is an eleven-to-sixteen mixed comprehensive school sending about 25 per cent of its pupils on to further education establishments, and as 'Young Enterprise' is aimed at the fifteen-to-nineteen age group, there was an initial lack of enthusiasm among the staff. It seemed to us as though the pupils would be overshadowed by other companies with students from the sixth-form college or by schools with well-established sixth forms. However, as 'links with industry' features high in the order of priorities with this school, we decided to investigate the scheme further.

One of the governors was a local industrialist, and he had already expressed an enthusiasm for 'Young Enterprise'. Both he and I were invited to serve on the area board formed to administer 'Young Enterprise' in Greater Manchester, and it was decided that pupils from Hope High School and young workers from Universal Metal Products (UMP), a subsidiary of Metal Box, should work together to form a 'Young Enterprise' company.

The host company had to accept an initial commitment, since a 'Young Enterprise' company needs a place to meet. UMP made a staff dining room available, and it was planned that the youngsters should meet every Monday between 16.30 and 18.30. The school undertook to take the pupils there, and UMP made arrangements for transport home. Refreshments were left by the canteen staff and over these the young people from the two environments began to get to know one another.

Having acquired a 'Young Enterprise' company kit from headquarters in London the host company had to provide four advisers. (The advisers are central to the success of the exercise.) UMP was particularly fortunate in recruiting middle-management personnel whose interest and enthusiasm, coupled with a remarkable patience and a teaching ability not often found outside the profession, ensured the success of our venture. One was the buying adviser, one the production manager, one the selling adviser, and one the accountant. Their responsibility was to study the 'Young Enterprise' company kit, to give basic teaching and guidance to the youngsters and to be, as their title stated, advisers. The young people were to be known as achievers, and each achiever was to be a director of the company. They were to take on the roles necessary to the forming and running of a company, to hold board meetings, decide upon a product, manufacture it, sell it, keep abreast of the paper work, and finally to prepare an annual report and balance sheet and declare a dividend. This appeared to be a very advanced exercise for boys and girls whose average age at the beginning of the exercise in September was under sixteen. They had roughly seven months to run – the annual shareholders meeting was already scheduled for the beginning of May.

While the advisers were studying the 'Young Enterprise' company kit and learning their role, Hope High School had to find some achievers. It was necessary to tell the pupils about 'Young Enterprise', float the idea and test the response. Before the summer holidays, the whole of the fourth year (soon to be the fifth year) was told about 'Young Enterprise' by one of the organization's three full-time officials. He brought many examples of 'Young Enterprise' company products to show. There were soft toys, place mats, calendars, pictures . . . a vast range of goods, including elbow and knee pads for skate-boarders. Interested pupils stayed behind to investigate further, and about thirty (one-sixth of those present) took explanatory leaflets and application forms away with them. Twenty forms were returned, signed by the parents, giving their consent for their children to participate. These parents then received confirmatory letters from the area board.

Of the original twenty, only twelve achievers from the school completed the course. Some could not sustain the regularity of the Monday evening commitment – partly because of involvement in various school activities, and, of course, 'mock' examinations. All 'Young Enterprise' companies face these difficulties, regardless of age group. In addition, many pupils in this school were already involved on work-experience programmes of one kind or another. However, it is interesting to note that, nationally, 'Young Enterprise' companies are whittled down to a hard core of achievers – those who can sustain their enthusiasm and cope with the quite rigorous pressures put upon them.

During this pre-September period, young people in the factory were approached, and of those who were involved initially, only five were with the group by the following May. Again these numbers appeared to be fairly average when compared to other 'Young Enterprise' companies. Ideally the aim was for a total of twenty-five, which would probably stabilize at around fifteen.

When the school re-opened in September, plans were made for the first meeting which would take place towards the end of the month. At this meeting, the achievers would appoint a managing director, buyer, accountant, secretary, production manager, sales manager, and so on, from among their number, decide upon their company title and product, then make plans for selling their shares to raise their capital. Still aware that other 'Young Enterprise' companies would consist of achievers taking A-level economics course , the careers and guidance staff felt that no fifteen-year-old could take on any of the roles unless he knew something of what the role entailed. One of the house tutors therefore took it upon herself to plan a three-week basic course on the forming and running of a company, and on the sampling and testing of a product. The achievers met each lunch hour until the first Monday evening meeting. This background gave them a certain confidence that the school felt to be essential. The achievers from the factory lacked this basic knowledge and it has been decided to make similar provision for them in future.

The first year

The company was formed. The achievers adopted the title Universal Enterprise and the company was officially registered under the Companies Act in that name. The achievers sold the £0·25 shares to family, friends and teachers. A maximum holding of five shares is a 'Young Enterprise' rule, and a ceiling is set for the amount of capital to be raised. (Universal Enterprise raised about £80·00.) Volunteers

assumed the various roles. All achievers were directors and attended the board meetings with which the evenings usually began.

The real problem at the beginning was to decide upon a product. It had to be something that they could make with the equipment at their disposal or with equipment that they could easily borrow. It had to be something that used readily available, cheap raw materials, and would sell well at a price that would give the company a profit. Several ideas were floated and possibilities explored. After three weeks, the board meeting examined the prototype – an elasticated belt with clip buckle. The buyer presented the report on supply of elastic and buckles; the production manager presented the report on the number of sewers required, how many sewing machines were available, and how many belts could be produced each week; the sales manager reported on the proposed market (school-family); and the accountant explained the costing and suggested pricing.

The Universal Enterprise company went into production.

The board soon decided to make a second product for the Christmas market (calendars) in order to occupy those achievers who were unable to make belts because of the lack of sewing machines. Once Christmas was over, the board planned to replace calendars with key rings.

Halfway through the seven months, the achievers changed roles. By this time the leaders had emerged and others had dropped out. An emergency board meeting had to consider the question of cash flow. Too much capital was tied up in raw materials, and until the product was available and sold, the board had to curtail payment of wages. (Nominal wages were paid at an hourly rate.) Thus the achievers learned a valuable and salutary economic fact – no sales, no income, no wages.

The advisers were always available, but as the achievers gained in confidence they relied less upon them and took more initiative themselves.

The 'Young Enterprise' award

The managing director's report was prepared at the end of April and distributed to the shareholders. Copies of the reports and an exhibition of the products of all the 'Young Enterprise' companies were shown at the awards evening. Parents and friends gathered at Manchester Polytechnic to hear each managing director deliver his report and, together with his fellow directors, answer questions put by the examining panel of local businessmen. Marks were also awarded for the product and for the monthly accounting and other paper work, and for the success of the finances of the company. Universal Enterprise paid a dividend of 16 per cent after Corporation Tax had been deducted.

Five companies – hosted by Elf Oil, Dunlop, Mather and Platt, British Vita and UMP – reached this final stage. The marking was close, and Universal Enterprise was just ahead. The Greater Manchester 'Young Enterprise' Cup was presented by Sir Alex Smith – the director of Manchester Polytechnic – to the managing director, who did not celebrate his sixteenth birthday until July.

The examination of O-level standard, set and marked by Maidenhead Technical College, was open to any achiever. There was no compulsion to take the paper, and at Hope High School the examination was not seriously considered until after Christmas. By that time some of the more adventurous achievers decided that there was nothing to lose and asked to be entered. To everyone's delight, six gained the qualification, and one of them was singled out for obtaining the second highest marks in the country.

What of 'Young Enterprise' this year?

The Greater Manchester Area Board has succeeded in getting twelve 'Young Enterprise' companies into operation.

Hope High School is again working with UMP, and the company is called Alpha Enterprises. The metalwork teacher at Hope High School has joined the advisory team – a new departure; and the accountant adviser is from the supporting bank – National Westminster. The managing director is a girl who is determined that her fellow achievers will not slack during school holidays.

The product has been a problem. The board decided to make and package biscuits. They negotiated a deal with Metal Box to supply an attractive tin but, although the biscuit dough was excellent, they found difficulty in producing a uniform biscuit and then had problems with packaging. Fearing the Christmas market would slip by, the achievers had to take emergency measures. They negotiated with a sweet manufacturer, bought in bulk, filled the tins with 'loosely' packed sweets and did a roaring trade at the school carol concert. They then made up their minds to master the biscuit problem to catch the Easter trade!

To succeed, 'Young Enterprise' requires the commitment of a host company and advisers who are prepared to give freely of their time and effort. Companies in this category, at this time, are not easy to find, and this is partly responsible for the slowness of 'Young Enterprise' expansion.

Selective schools have predominated in the past but, as Hope High School's experience has proved, young people of different abilities, backgrounds and groups can benefit. In addition to the obvious advantages, invaluable experience is gained in working together as a team within the necessary framework of modern commerce and industrial requirements. It is not our aim to produce embryonic tycoons but an increasing number of young people who, through personal experience, understand the needs and problems of modern industry.

Examples of national bodies concerned with promoting schools/industry understanding

Careers Research and Advisory Centre Insight Programme
Project Director: P. D. Blandford, Careers Research and Advisory Centre (CRAC), Bateman Street, Cambridge CB2 1LZ

CRAC courses and publications support careers guidance work in schools, colleges and universities. The CRAC Insight Programme provides courses for sixth-formers and undergraduates and enables them to consider the creative and intellectually challenging demands of a management career.

Department of Industry

Industry/Education Unit
Mr S. Burt, Department of Industry, Ashdown House, 123 Victoria Street, London SW1E 6RB

The Industry/Education Unit exists to promote closer cooperation between industry and education. Its objectives are to improve attitudes towards manufacturing industry and to encourage more young people to develop an interest in these careers.

Project – Engineers and Technologists for Tomorrow (PETT)
PETT Promotions Officer, Department of Industry, Room 302, Gaywood House, Great Peter Street, London SW1P 3LW

Concerned primarily with promoting engineering as a career, but its magazine *Project* and travelling exhibitions have a wider function in explaining the role of industry. PETT also supports other educational activities to promote the teaching of technological subjects.

Regional Directors

1. Mr R. L. Sutton
   Northern Region
   Stangate House
   2 Groat Market
   Newcastle upon Tyne NE1 1YN

2. Mr N. S. Belam
   North West Region
   Sunley Building
   Piccadilly Plaza
   Manchester M1 4BA

3. Mr P. E. Dougherty
   Yorkshire and Humberside Region
   Priestley House
   Park Row
   Leeds LS1 5LF

4. Mr J. Hall
   East Midlands Region
   Severns House
   20 Middle Pavement
   Nottingham NG1 7DW

5. Mr A. A. George
   West Midlands Region
   Ladywood House
   Stephenson Street
   Birmingham B2 4DT

6. Mr B. Feinstein
   Eastern Region
   Charles House
   375 Kensington High Street
   London W14 8QH

7. Mr A. C. Coging
   London and South Eastern Region
   Charles House
   375 Kensington High Street
   London W14 8QH

8. Mr R. C. McVickers
   South Western Region
   The Pithay
   Bristol BS1 2PB

Industrial Society
Education Liaison Officer: Patrick Winter, Robert Hyde House, 48 Bryanston Square, London W1 1DQ.

The Society organizes two-day 'Challenge of Industry' courses in schools at which industrial managers and trade union officials combine to give sixth-formers an insight into the role of industry and the need for management through cooperation and consent.

Institute of Careers Officers
General Secretary: Mrs Mary Parsons, Old Board Chambers, 37a High Street, Stourbridge, West Midlands DY8 1TA

The Institute, both nationally and in local branches, organizes conferences and other activities to foster links between schools and working life.

Introduction to Industry Scheme for Teachers
Miss C. L. Richards, Education and Training Department, CBI, 21 Tothill Street, London SW1H 9LP

The CBI, jointly with local education authorities, arranges for teachers of all disciplines to spend up to three weeks in industrial and commercial firms.

National Centre for School Technology
Director: Mr G. B. Harrison, Trent Polytechnic, Burton Street, Nottingham NG1 4BU

The NCST, together with the School Technology Forum (at the same address), promotes technological education through curriculum development, publications and the training of teachers in the teaching of technology in schools. The Centre also provides a 'hot-line' for urgent enquiries.

Opening Windows on Engineering
Colonel W. A. Hare, Institution of Civil Engineers, 1–7 Great George Street, London SW1P 3AA

A scheme jointly sponsored by the Institutions of Civil, Electrical, and Mechanical Engineers arranges for young professional engineers to visit schools and talk to classes of age thirteen to fifteen about the realities of engineering.

Project Trident
Director: Mr Philip Mitchell OBE TD, 11 York Terrace East, Regents Park, London NW1 4PT

The Trident Trust arranges the secondment to LEAs of staff from local and national firms to set up projects which help schools to organize work experience and community service. The Trust also sponsors students on residential courses and expeditions for educational purposes.

Schools Council Industry Project
Director: Mr Martin Lightfoot, Schools Council, 160 Great Portland Street, London W1N 6LL

The Schools Council Industry Project, in collaboration with CBI and TUC, aims to develop liaison between schools and industry and commerce, and through this to promote means of enabling schools to create an understanding of modern industrial society.

Schools Information Centre on the Chemical Industry
Information Officer: Dr Barbara Haines, Polytechnic of North London, Holloway Road, London N7 8DB

This centre provides an enquiries service for teachers about the chemical and allied industries; it produces teaching materials, organizes study tours for teachers and assists in the establishment of links between industrialists and science teachers.

Standing Conference on Schools' Science and Technology
Executive Secretary: Mr David Bloomfield, Institution of Mechanical Engineers, 1 Birdcage Walk, London SW1H 9JJ

A national forum of educational, industrial professional and governmental interests to advance the development in schools of scientific and technological education. It acts as the national voice of Science and Technology Regional Organizations (SATROs), and supports curriculum development work by the School Technology Forum.

Teacher Associations
The recognized teacher associations all have an active interest in the development of schools/industry links, with which local education authorities will be familiar.

In addition, a number of subject teacher associations have a particular interest in developing the industrial/commercial relevance of their subjects. Among those actively engaged are:

Association for Science Education (Secretary: Mr Brian Atwood, College Lane, Hatfield, Herts AL 10 9AA). The association for teachers of science in schools and colleges; in addition to its national development and publicising activities has seventeen regional committees whose representatives participate in many local initiatives involving school/industry liaison.

Economics Association (General Secretary: Mr R. F. R. Phillips, 18 Cedar Road, Sutton, Surrey SM2 5DF). Provides information and publications for teachers of economics.

Mathematical Association, Schools and Industry Committee (Secretary: Dr Margaret Rayner, St Hilda's College, Oxford OX4 1DY). Assists teachers and students

wishing to gain experience of the mathematics used in local industry and commerce.

Further information on subject teacher associations may be obtained from the Council of Subject Teaching Associations (Secretary: Mr H. L. Freakes, 3 Wellington Road, Enfield, Middx. EN1 2PB).

Understanding British Industry (UBI)
Director: Mr John Nisbet, Sun Alliance House, New Inn Hall Street, Oxford OX1 2QE

This CBI initiative aims to make teachers and pupils more aware of the role which industry and commerce play in the nation's economic and social life. Regional liaison officers are being appointed in various parts of the country to encourage local links. The project's Resource Centre provides information to teachers about relevant teaching materials.

Young Enterprise
Director General: Mr D. L. Naier, 46–47 Old Bond Street, London W1X 3AF

This scheme provides opportunities for older pupils, with financial help and technical advice from local industry, to set up and run their own miniature business: selling shares, organizing production and marketing the product.

Impressions of a Visit to China – July 1978

This autumn sees the arrival of the first group of Chinese post-graduate students to study in Britain. Their visit is the result of a trip the then Secretary of State, Mrs Shirley Williams, made to China in July of last year. Stephen Jones – an Assistant Secretary at the DES and a member of that party – describes his impressions of the country.

Day 1: London

The Secretary of State's departure is in doubt until the last minute because of the Parliamentary situation – a known risk for some weeks. We finally leave in the knowledge that she may have to return at short notice. Heavy security at Heathrow. Secretary of State remarks that VIP lounge – where we are – would be a good place for an assassination attempt. Hurriedly drain remainder of gin and tonic. Board plane with some sense of relief.

Day 2: Tehran

Heat and humidity impressive even at midnight, Hilton Hotel is mercifully near foothills on cool side of city. Heat next day even more impressive – as is surcharge for use of hotel swimming pool. Very little outward hint of turmoil to come in Tehran.

Day 3: Peking

Memorable flight from Tehran. Gobi Desert looks primevally bleak and inhospitable. Chinese Airways supply shapeless uniforms for what I unworthily suspect might be shapeless stewardesses; for passengers, piping hot and very refreshing face flannels are available at regular intervals.

HM Embassy in Peking already informed that Secretary of State must return early to London – possibly after three days – and have been rearranging all official meetings to take place before then. Secretary of State agrees, having secured an assurance that she will see something more of China than conference rooms.

Accommodation in Peking is Government guest house, comfortable, guarded and secluded behind shrub garden. A fleet of three cars provided for our use for any journey, however short. They travel in convoy, the drivers hooting long, loudly and often to persuade pedestrians and cyclists to prolong their active life. No private cars anywhere, but almost every other conceivable form of wheeled transport. Number of bicycles makes Cambridge seem unaware of the invention of the wheel. Lorries, tractors and cars, ridden, pulled or pushed by men or animals, and carrying anything from crops to furniture and families. Impression is of massive number of people *en route* from or to something – presumably the rest are actually doing things indoors. Peking is a dusty city, to an uncomfortable extent; incidence of lung complaints must be high.

Meeting with Chinese Minister of Education. At the end HM Embassy say the meeting is remarkable for its openness, warmth and lack of ritual recitation of the evils of the Gang of Four. Enormous range covered – Secretary of State acquires a justified reputation for energy. Interpreter (actually a diplomat in charge of British Desk at Foreign Ministry) remarkably adept at handling quick-fire exchanges. Meeting gives us our first encounter with cups of hot water with leaves floating in it. No apparent flavour to my jaded Western palate.

Later, an unmemorable meeting with the Science and Technology Commission, except for expression of growing astonishment on face of a particularly mournful and lethargic Chinese host as he took in the translation of Secretary of State's intention to emulate Chinese 'vigour and energy' – not conspicuously present in that representative of the race – by visiting all the main tourist sites in the space of twenty-four hours.

Day 4: Peking

Visit to Mao Tse Tung Mausoleum set in centre of Square of Heavenly Peace. Square still impressive by sheer size, but apparently far more so before the construction of the mausoleum. Pay respects to embalmed body of former Chairman along with hundreds of silent Chinese, all at their most inscrutable: quite impossible to tell what emotion, if any, they are feeling.

Visit Great Wall and Ming tombs. The famous picture of the former is of the best-preserved portion, which we were shown. It is

not looking at its best; rain and mist prevent us seeing anything further than five yards away. There are much older portions of the wall which, we are told, are in their way more impressive. Our fat Chinese host appalled that Secretary of State actually wishes to walk up and along the wall in such conditions. Umbrellas materialize nonetheless. Ming tombs are all set in an impressive valley some miles out of Peking. We visit one which has been wholly excavated. Lots of facts provided during a fascinating visit. The occupant is well and truly on display; there is no part of him, internal or external, which is not preserved in a suitable form, catalogued and presented to one's gaze – admiring or slightly queasy depending on how strong the stomach.

Evening visit to Peking Opera. 'Rags to riches' story set in the time of emperors. Such a performance would have been unthinkable until very recently.

Day 5: Peking

Talks with Academy of Sciences, responsible for work of ninety research institutes. There is also a network of institutes under the Education Ministry, usually in universities. Chinese academics candid about their lack of trained scientists and up-to-date equipment; they exhibit desire to profit from whatever help UK can offer.

Meeting with Vice-Premier Fang Yi in Great Hall of the People, which forms part of the boundary to the Square of Heavenly Peace. Huge building apparently built at great speed. Vice-Premier is a diminutive figure with a pronounced birthmark about which he is sensitive: he grows in authority as the meeting progresses. Apparently he speaks fluent English (and many other Western languages), and it is clear from his expression that he understands what is being said before it is translated, but he chooses to talk wholly through an interpreter. Another wide-ranging discussion, untrammelled by ideology.

Afterwards, Chinese hosts ready for siesta equivalent, but Secretary of State learns there is just time to visit the Forbidden City. The Chinese shoulder their burden philosophically and spare no pains to show her as much as possible in a short time. Overwhelming impression of savagery in architecture and its decoration, despite breathtaking beauty of much of it.

In evening, Secretary of State departs for London and the division lobby, on the basis that she will return as soon as possible. Chinese courteously show no surprise at the idiosyncrasies of the Mother of Parliaments. Agreed that visit should continue for remainder of party. Private Secretary remains in China by kind permission of Secretary of State.

Day 6: Peking

Party now styled as UK experts surveying aspects of Chinese education to help assess potential UK contribution – conscious that Permanent Secretary and Senior Chief Inspector can lay just claim to this title; basis of own claim more shaky. Someone has to carry the official presents, however.

Visit Chinghua University, Peking. There was clearly considerable disruption of the University's work while the 'Gang of Four' were in the ascendancy; indeed, the university describes itself as one of the 'major casualties' of the period. Painfully climbing back towards pursuit of academic standards once more.

Shopping expedition in Peking. Our convoy of official cars is not content to park in the road, they actually mount the pavement and manoeuvre themselves to within two feet of the main entrance. This is not unlike seeking to perform this feat outside Selfridges, with the difference that it apparently caused little resentment amongst the milling pedestrians. Department stores fully stocked with a wide range of goods. Difficult to compare prices but things did not seem cheap, apart from jade.

Day 7: Changsha

Leave Peking by air for Changsha, Central China. Learn that one of the announcements on the plane was to request those carrying firearms or radioactive materials to surrender them to the stewardess, who would look after them carefully and return them after the flight. No takers, apparently.

Temperature in Changsha 100°F. Meet director of education for province. Responsible for a primary school population of eight million. Middle school population of 3·6 million, secondary population of 50,000. Shortage of teachers a major problem—especially in maths, science and foreign languages. Slight sense of *déjà vu*, but scale of problem enough to daunt the most hardened chief education officer.

Evening. Outside Peking, it appears *de rigueur* for visiting parties to meet the chairman of the local revolutionary committee – the senior local official. Permanent Secretary establishes *entente cordiale* with rather formidable chairperson of revolutionary committee,

a lady who had apparently risen that day from a hospital bed. It does not prevent her putting away a fair quantity of potent Chinese spirit and insisting that her guests do the same.

Day 8: Changsha
Visit first middle school of Hunan province, Changsha. Three hundred teaching staff for 5,000 pupils. The school runs a farm and workshops: a large and prestigious institution. All subjects compulsory, except for a modest experiment in arts/science specialization.

Visit to second school in Changsha turns out to be a guided tour of a virtual shrine to Mao Tse Tung. He was first a pupil and later taught at the school and his presence is inescapable, whether manifest in thoughts or pictures.

Day 9: Shanghai
Depart for Shanghai by air. Visit rural commune – not apparently the standard tourist commune, but well-to-do. Many statistics, all tending to prove that production is on the increase and the recovery from the dark days of the 'Gang of Four' under way. Commune runs its own education and hospital services – both pretty basic. Family is clearly the fundamental and very cohesive unit; the individual is subject to the collective will of the family, to the extent that the latter selects the jobs or careers of the young men, who appear to accept this without question. The old are respected and cared for. Subjugation of the individual will to family or state is a basic ingredient of Chinese life, pervading its values and producing a very appealing selflessness. To Western minds, the less acceptable face of this coin is a clear disregard for the value of an individual human life, though with a population of 900 million this is perhaps not to be wondered at.

Day 10: Shanghai
Opportunity to visit Shanghai itself. Quite different atmosphere from other Chinese cities. Its people regard Peking and its inhabitants as drab and provincial. Certainly there is more life and sense of excitement here, as might be expected from China's most cosmopolitan city. Private enterprise apparently flourishes, if covertly, as there is an occasional cinema – albeit showing pretty middle-aged films.

Evening banquet especially memorable. Pause for digression on Chinese food, without some description of which even this summary record would be failing in its duty. Chopsticks are obligatory and universal, though of many different sizes and textures: the latter is important when what one is called upon to eat with them includes thin slices of cucumber and tomato, not to mention far less appetising, but no less slippery, pieces of sea-slug. This is clearly regarded as a choice morsel to be distributed generously by hosts to their guests at formal dinners. It is the only item amongst the many dishes we sampled (which, in general, bear very little resemblance to things to be found in Chinese restaurants in UK) in which I, at least, can take no pleasure. All other dishes range from palatable to quite exquisite – not only in taste but also in appearance. Drinks are of three kinds, in ascending size of glass, a potentially lethal Chinese spirit used for toasts (the only way to deal with this, both for reasons of protocol and out of respect for one's palate, is to throw it down in one gulp), a sweet and not very amusing red wine, and beer or orange. Attempts to deal with the strong spirit by drinking it early on are thwarted by an enthusiastic refilling of the glass.

Day 11: Canton
Shanghai being approached by typhoon. Observe city battening down hatches, and leave for airport with gales blowing up fast. Ours is the last aeroplane out of the airport that day. In Canton we are rejoined by the Secretary of State, looking remarkably well after a long journey terminating in an encounter with a – different – typhoon, which had caused widespread flooding and delays between Hong Kong and Canton.

Day 12
Party departs Canton for Hong Kong, and thence to various destinations. Leave China and Chinese with great regret. Our hosts have at all times been considerate, courteous and good-humoured. Strident reassertion of Western values in Hong Kong provides a stark contrast.

STEPHEN JONES

Agricultural Education for Overseas Students

Over the last few years, the Technical Education and Training Organization for Overseas

Countries (TETOC), which provides professional advice on overseas aid in technical education, agricultural education and training, industrial training, public administration and management development to the Ministry of Overseas Development (ODM), has had to increase its work in the area of agricultural education and training to meet growing overseas demands. According to TETOC's Annual Report 1977–78, one of the colleges instrumental in improving agricultural education in secondary schools abroad is Worcester College of Higher Education. The Principal, Dr D. R. Shadbolt, writes about the work of his Rural Studies Division.

The Rural Studies Division of Worcester College of Higher Education is a major centre in the United Kingdom for the provision of courses for primary and secondary teachers of rural studies (which includes agriculture, horticulture and related sciences). Administratively located within the School of Sciences, it has access to science and home economics laboratories and equipment which, with its own farm, workshops and laboratories, provide the resources for practical and theoretical studies.

Since its foundation in 1946, the Rural Studies Division has made an increasing contribution to the education of teachers from abroad, and in 1976 a diploma course for teachers and teacher trainers was developed in response to requests from overseas.

The diploma course focuses on the needs of the teachers and teacher trainers concerned with school agriculture. While due importance is given to deepening academic knowledge and understanding, the main purpose of the course is to provide first-hand experience and to encourage the acquisition of essential teaching and agricultural skills. Its aim is to help teachers and teacher trainers to exploit fully the contribution agriculture can make to educational goals within the school curriculum, and thus better equip pupils for future work in rural sectors.

The diploma is externally validated and is recognized by overseas administrations as a post-graduate qualification. The course integrates educational and agricultural subjects concerned with the knowledge, understanding and skills necessary for the practice of teaching agriculture in schools – teaching skills, teaching aids, teaching practices and curriculum development as applied to agronomy, animal husbandry, agricultural science and farm machinery. Study is also made of departmental and school administration through case studies of schools, colleges and agricultural institutions.

The current course includes members from Afghanistan, Belize, Egypt, Kenya, Lesotho, Malawi, Swaziland and Zambia who are senior administrators, headmasters, teacher trainers and teachers. The Afghanistan group are the second phase of teachers in a continuing ODM/International Bank for Rural Development (IBRD) project aiming to construct and equip seven agricultural secondary schools and a teacher training unit. Ten of the twenty-two members of the 1978–79 course are from Afghanistan, and the fourteen students from Afghanistan who completed last year's course are back home helping to develop the programme.

In addition to the diploma course, the Rural Studies Division also runs courses designed to meet the individual needs of overseas governments and it maintains a regular commitment to courses for individual administrators, teacher trainers and teachers on three-month attachments. A one-term course for senior administrators in agricultural education at school level is to be introduced later this year.

The Division's staff undertakes consultancies for ODM and participates in agricultural education seminars organized by the British Council, in overseas countries, and for some years it has operated a British Council Easter Study Course for overseas students who are following courses in other institutions in this country.

D. R. SHADBOLT
Principal, Worcester College of Higher Education

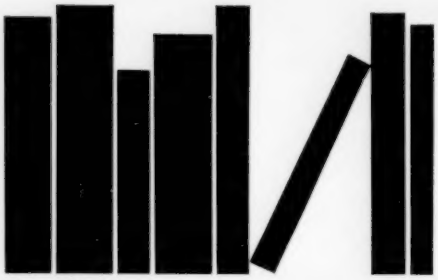
Basic education statistics

Public Sector in England and Wales and Universities in Great Britain

		1966–67[1]	1974–75[1]	1975–76[1]	1976–77[1]
Schools					
Nursery:	Number of schools	464	612	631	648
	Number of pupils (thousands)	29	48	50	52
Primary[2]:	Number of schools	22,831	22,280	23,353	23,364
	Number of pupils under 5 (thousands)	211	400	438	425
	Number of pupils aged 5 and over (thousands)	4,298	4,794	4,727	4,660
	Pupil/teacher ratio[3]	27·9	24·2	23·9	23·8
Secondary[2]:	Number of schools	5,729	5,035	4,982	4,988
	Number of pupils (thousands)	2,833	3,827	3,936	4,039
	Percentage in comprehensives[4]	14·4	69·7	75·6	79·9
	Pupil/teacher ratio[3]	18·2	17·2	17·0	17·0
Special:	Number of schools	797	1,489	1,505	1,541
	Number of pupils (thousands)	69	123	125	127
School leavers:	Percentage with				
	No GCE or CSE attempts	49·0*	18·0	15·6	14·2
	5 or more higher grade O-level/CSEs[5], but no A-levels	8·0	9·0	9·0	9·2
	2 or more A-levels	11·8	12·2	12·7	12·4
Teachers	Full-time in maintained nursery, primary and secondary schools	295,948	419,999	432,014	436,296P
	Full-time in further education colleges[6]	46,161	70,147	72,595	73,091P
Major establishments of further education[7] –total enrolments (thousands)		1,801·3	1,949·8	2,031·1	1,922·0
of which					
Full-time and sandwich		286·8	437·8	486·2	501·2
Part-time day		711·9	726·9	743·3	702·6
Evening only		802·5	785·1	801·6	718·2
Percentage of full-time and sandwich students in polytechnics		..	18·9	20·1	22·7
University students in Great Britain (thousands)[8]		184·2	250·6	261·3	271·8
Open University students in United Kingdom (thousands)[9]		..	53·8	56·0	61·2
Participation in full-time education[10] (as a percentage of age group)					
2–4 school[11]		11·0	21·8	24·7	25·7
16–18 school and further education college[12]		22·9	35·6	36·1	37·8
19–20 further education colleges[13]		4·2	8·2	8·1	8·8
universities		4·5	6·5	6·6	6·7
Expenditure[14]					
Total: at constant (1977 survey) prices[15] £million		4,540	6,605	6,706	6,746P
as percentage of Gross National Product[16]		4·7	6·3	6·4	6·2

[1] Academic year. [2] Including middle deemed primary schools and immigrant centres. [3] Ratios take account of the full-time equivalent of part-time teachers and count each part-time pupil as 0·5. For 1974–75 *et seq* only qualified teachers are included. [4] Including middle deemed secondary schools. [5] O-level grades A–C and CSE grade 1. [6] Maintained and assisted colleges only (including former colleges of education). [7] Maintained assisted and grant-aided. [8] Full-time students only. [9] Undergraduate, postgraduate and post-experience. [10] In maintained, direct grant and independent establishments. [11] Each part-time pupil counted as one. [12] Including teacher training colleges and universities. [13] Including teacher training colleges. [14] Financial years data. [15] England and Wales. [16] United Kingdom public expenditure on education (including school meals and milk) as a percentage of GNP at market prices. P Provisional. * Estimated.

Detailed statistics of education (in seven annual volumes) are on sale at HMSO bookshops. Summary statistics (facts cards) relating to each of the seven volumes are available free on request from the DES Statistics Branch (Telephone 01–928 9222 ext 2776).



Book Reviews

Education in Britain since 1944
W. Kenneth Richmond
Methuen £7·00 hardback, £2·95 paperback
The Changing Urban School
Robert Thornbury
Methuen, £8·95 hardback, £4·50 paperback

Education in Britain since 1944 has the distinct and unusual merit that, with one exception, it has a unitary perception of 'education' and embraces the primary, secondary, higher and continuing phases in its treatment. The glaring exception is further education, all the more unfortunate in view of Richmond's central concerns: the place of cost-effectiveness, flexibility of response and appropriateness to national interests in our educational arrangements.

The subtitle 'a personal retrospect', suggests the main fault of the work, implying as it does an indulgence on the part of the reader, and greater latitude and less rigour on the part of the author. Nevertheless Richmond's survey of thirty-five very crowded years supplies a useful and clear, if rather brief and undemanding, overview. He lambasts characteristically the soft cogitation and woolly prose of the Hadow and Plowden enterprises, particularly the latter – although he is by no means out of sympathy with the core of their respective philosophies; rather he regrets their lamentable lack of precisely stated and objectively assessable aims.

Within the general survey there are to be found some more detailed and carefully considered areas well worthy of reflection and pursuit. For example, Richmond is compelling on the necessity for the painstaking preparation of the teaching profession before embarking on 'curriculum development'. His implication is that far too much was taken on with insufficient costing, planning and testing, with predictable results. He cites the Open University as a rare example of the really effective employment of educational technology simply because it adopted whole sets of resources as integral parts of a system and did not merely tack elements on to existing arrangements, as has often been the case.

The book starts and ends on a pessimistic note. However, the survey of thirty-five years, lying between these two knells, is too short on analysis to justify the author's conclusions. The crisis of education is part of a much wider crisis affecting industrial societies. It has not arisen because the Plowden report was 'blowsier' than Hadow (the author's enigmatic description) or because the eleven-plus question generated so much heat. Nor is it because: 'the amount of intellectual effort involved in the award of a first degree in Britain is a good deal less than that . . . in Eastern Europe'. Such assertions require far deeper treatment than can be found in these 168 pages, even if they may offer us some seasonable provocation.

Thornbury, in *The Changing Urban School*, covers some of Richmond's territory, concentrating our attention on inner-urban England in the last twenty years. Although he is careful to ground some of his case on hard data – such as the Registrar-General's categories and returns – and on an extensive bibliography, yet there remain too many passages where important assertions remain unsubstantiated. This fault is compounded by a hyperbolic and excitable style; we learn for example of the 'phenomenal growth' of remedial departments, of 'the national debate, verging on hysteria' over literacy. Some welcome ballast is provided by the author's very proper emphasis on the roles of caretakers, secretaries and ancillaries – crucial personnel who can make or break the effectiveness of a school, and who are usually ignored or played down in pedagogic approaches to educational questions.

Thornbury performs a valuable task in his explanation of the way inner-urban education is inextricably enmeshed in social and economic developments, in such matters as housing, demography or immigration. It is for these reasons that he is dismissive of the EPA-type approach. While he is sympathetic to certain features of curriculum development or of the resources revolution, he sees them as ineffectual placebos at best, counter-productive irritants at worst. His repeated solution is 'total urban strategy', easier to advocate than to fashion, particularly when it

may involve reversing the policies, tendencies and assumptions of over half a century.

Both Thornbury and Richmond draw one to a similar conclusion: that for many years intellectual reach has exceeded managerial grasp. This is not necessarily because administrators vacillate or suffer from narrow perceptions, as the authors tend to suggest. It is rather because it is much more easy for an intelligentsia to generate strategies, and for interest groups to aggregate and present demands, than it is for government to reconcile these things with a reality, where the demands turn out to conflict, and available resources are found to be severely finite.

R. A. S. HENNESSEY

The teaching of history
Dennis Gunning
Croom Helm £7·95 hardback

Dennis Gunning has written a useful book, although much of it is based on an idiosyncratic view of history. In the introduction he makes a distinction between academic history and school history. He goes on to argue that in school history the teachers' prime aim must be to teach concepts, because a grasp of concepts is a prerequisite to understanding historical material. Although, oddly, he does not refer in his bibliography to the Schools Council History Project 13–16, he is well aware that his views are 'in opposition to some of the most distinguished recent thinkers in the field'.

Gunning admits that the skills useful to historians are also potentially useful to school students. Indeed, throughout his book he bases much of his discussion of classroom method on the acquisition of intellectual skills, such as extrapolation, evaluation and analysis. Gunning's main emphasis is, however, on the 'primacy of concepts'; yet he does not explore the view that concepts are only the means whereby historians impose on the records of the past their own understanding and prejudices.

Gunning's view of history may be his own, but this book makes two valuable contributions to the teaching of history in school. First, his emphasis on concepts is a timely reminder of the importance of comprehensible vocabulary at all levels of historical teaching and discussion. Secondly, the greatest strength of this book lies in its description of method, and it includes exercises clearly designed to be practised by teachers as a preliminary to lesson preparation.

There are useful sections on games and simulations, on the use of projects, on note-taking and on planning sequences of lessons and activities.

This book was written specifically for 'beginners' but many other teachers will find it helpful.

G. M. V. ALEXANDER

Individual demand for education: analytical report
Kjell Harnqvist
Organization for Economic Cooperation and Development £3·40 paperback

This slim volume by Professor Harnqvist on the study of individual demand for education in Sweden is especially important for those people engaged in the future planning of educational provision. In recent years, the individual in society has tended to take a back seat as, more and more, the planners have tended to look at manpower forecasts and social needs. Short of creating a totalitarian-type state, there is no way of planning for educational provision that does not take the wishes of the individual very much into account.

It comes as something of a surprise to realize that there is so little quantifiable evidence about the way individuals actually choose their post-compulsory education – and not only in Sweden – although it must be doubtful if Harnqvist's elaborate models and charts really take us any further in understanding the factors that influence individual choice – sex differences, intellectual abilities, educational achievement, personal interests and aspirations. Similarly, reviewing the thinking on the relationship between educational choice and the cultural and socio-economic conditions of the home and family, Harnqvist has little to say that is new. Harnqvist remains unconvinced, it would appear, that structural reform of an education system of the magnitude envisaged by the supporters of recurrent education will have much effect on overall demand:

> 'How, for instance, will such changes influence the inequalities as to sex, social and geographical background that are now almost universal in post-secondary education? Will the less educated groups use the "second chance" that the new system

opens up? Will the class bias in youth education continue to diminish or will it be further strengthened and students from lower strata tend to postpone their continuation with the risk of never returning to education? In view of the difficulties experienced in recruiting the least educated groups into adult education such apprehensions are not absolutely groundless; opening up new possibilities is not a sufficient measure for achieving equality'.

How far, one might ask, do educational planners take individual demand into consideration? Harnqvist does not really answer this question, although he suggests that planners have to do two things:

'One is to predict variations in individual demand and to adjust educational provisions accordingly (the adjustment function). The other is to devise changes in the educational system in order to guide individual demand in the required direction, or more specifically, to reduce unwanted stabilities in the students' choice patterns (the change function). Instruments and techniques are needed for both functions but, and partly as a basis for the planning aids, an improved understanding of individual demand is essential'.

M. Le Guillou

Sociological perspectives on school and education
Ivan Reid
Open Books £2·95 paperback
Sociological interpretations of schooling and classrooms: a reappraisal
Len Barton and Roland Meighan (editors)
Nafferton Books £2·60 paperback

The sociology of education is now so much a part of the warp and weft of teacher education that it is easy to forget that less than twenty years ago only six colleges offered courses in the subject. The rapid advances of the 1960s stemmed from both the expansion of teacher education and the development of sociology itself, and by the end of the decade the number of available courses had increased to fifty.

Ivan Reid charts the development of the sociology of education in Britain from its reliance on one major perspective – structural functionalism – to the more complex position that exists today. After a brief review of the major macro- and micro-perspectives, Reid proceeds to apply these to a number of selected topics. Readers without any previous knowledge of sociology may need to support this section with further reading, but the strength of the book is the way in which a variety of theoretical models is used to illuminate many major educational issues of current interest.

In a final chapter, Reid makes a plea for a single sociology of education, and he elaborates and extends his argument in a paper presented to a Sociology of Education Conference at West Hill College, Birmingham, in January 1978.

Len Barton and Roland Meighan have collected and edited nine of the conference papers, and together they make a stimulating and rewarding read.

Many of the papers explore the idea that the various perspectives are complementary rather than contradictory. This is especially true of the first four contributions, by David Hargreaves, Ivan Reid, Olive Banks and Gerald Bernbaum. Professor Banks, in fact, goes further, and cogently argues for the integration of structuralist and interactionist perspectives, citing Bernstein's approach as a genuine attempt at bridgebuilding. 'Studies of modes of communication, patterns of family structure, parental control, parent/child interaction and patterns of structure and interaction in the school are all related in a systematic way to social stratification and social change'.

Later papers by Sara Delamont, Andy Hargreaves, Roland Meighan, Graham Vulliamy and Geoff Whitty, although concerned primarily with methodology, are nevertheless consistently set in appropriate theoretical frameworks. Hargreaves uses the concept of 'coping strategy' to offer a revealing insight into the way in which the two major perspectives might be unified.

M. D. Gill

Teaching Art
Doreen Roberts
Batsford £4·95 hardback, £3·50 paperback

A book that aims to provide practical references and to cover basic aspects of visual education for those who teach art – particularly those with very little art training – raises both hope and doubt. The hope is that somehow the author will have found words that provide the necessary discovery of underlying principles for those with little training; and the doubt is that only experiences far

more substantial than a book could ever do that.

The first of the book's aims is well achieved. It offers information about materials, equipment and sources of ideas, and gives advice on class organization, teaching methods and the development of those ideas. The style of the writing, as well as the advice itself, is crisp and to the point, and carries the conviction of sound personal experience. For example, on papier mâché we are told that 'seven layers of paper will be rock hard when dry', and in the section on class organization there is realistic advice about discipline which leads into a consideration of aspects of safety and general good management. Well-chosen illustrations – unfortunately all in black and white – complement the text and provide added stimulus. Some of the pieces of fabric appliqué and embroidery that are shown have a tactile quality that makes them very inviting.

The second of the book's aims – to cover basic aspects of visual education which touch upon underlying principles – is dealt with less satisfactorily. The principles are there. They are implicit in the good advice on methods and sources of ideas, but by their spread throughout the text they are rendered less tangible as principles for those with little training. In a section on the use of pictures, films or slides as references, the author discusses whether it is permissible to copy a photograph and concludes that this does little to advance the pupil's real knowledge and advances only the superficial image. The importance of first-hand experience is implied, but teachers with little training in art need more than a hint of that principle.

However, this is a good book and provides much for those fairly experienced teachers who wish to extend the range of their work.

F. P. YOUNG

Reform and development of higher education. A European symposium

Council of Europe

NFER £9·00 hardback

Publication of the papers given at the education research symposium held in Granada in October 1977 on the theme 'Reform and Development of Tertiary (Higher) Education in Southern Europe' provides the reader with an opportunity to compare how United Kingdom educators and their European counterparts view similar problems.

As symposium chairman, Lord James of Rusholme had both the first and last word on the question of expansion and change in higher education. In his opening address he raised what became one of the most important themes in the proceedings: who should go to university? Lord James firmly believes that 'British universities are, or should be, intellectually élite institutions' – a point of view diametrically opposed to that of Professor Visalberghi of Italy, who advocates that universities are places which should be open to all. Visalberghi, too, introduced the concept of continuing education into the debate, something totally ignored by Lord James until his summing up of the proceedings. Almost reluctantly, it would appear, he comes to accept that 'any changes brought about in universities must include a flexibility that makes such education easier'.

Almost all the major issues related to tertiary education are discussed at length by the main contributors to the symposium. While Lord James stresses the need for the universities to be free of all but the most essential controls, Professor Kewenig (Federal Republic of Germany) – in reviewing the work of his country's advisory council for higher education and research – shows how German universities 'have been transformed unawares from the educational preserve of an actual or apparent élite into institutions for mass education'. He clearly favours the evolution of a close relationship between the education system and the employment market – a view shared by Professor R. A. de Moor of the Netherlands. The latter suggests that there is an overwhelming need for universities to undertake both structural and curricular reforms if they are to meet the challenge created by the changing economic and social situation.

M. LE GUILLOU

The evaluation of in-service teacher training

Euan S. Henderson

Croom Helm, £9·95 hardback

Within 224 pages this book provides enough information to sustain as many days' contemplation. While it confesses that the skills of evaluation cannot be mastered by book work alone, anyone interested in evaluation – whether administrator, inspector, adviser, tutor, student or teacher – will find a good beginning here. The book may be read at

many levels, and one reading will certainly not do it justice, for it is the sort of compendium to practice that will serve as a check list for many kinds of activity within this growing field.

The introduction indicates the growth of in-service education for teachers, and by page thirty-five the reader is immersed in a carefully argued case for a clear policy towards evaluation. By page seventy-six the evolution of ideas on evaluation has been charted from the 1950s – the hey-day of equating evaluation and measurement of outcomes – through the refinements of Mager and others in observing terminal behaviours under specified conditions with known criteria of acceptable performance. The broadening of this approach is traced through the work of Stake and Stufflebeam, and questions are raised about whether the evaluator's task is to describe and judge or merely to analyse and report information for the decision-makers to operate upon. Through the work of Scriven we are introduced to goal-free evaluation and the position taken by those who would not wish to miss important unintended outcomes by concentrating, as observers only, on the provider's stated goals. This is presented as a view contradictory to Stufflebeam, asking the evaluators to make value judgements, and in so doing is placing a heavier responsibility upon them than that demanded by Stake. Finally we are taken on to Parlett's and Hamilton's stance and the need for illuminative evaluation, which aims to say what it is like to participate in in-service work either as tutor or tutored.

The remainder of the book is devoted to a description of the state of the art of interview, questionnaire, measurement of attitude change and teaching skills, especially developing the ability for self-evaluation. All these chapters have very practical guidance to offer and each chapter has specific examples to illustrate methodology in action.

The book is completed by a substantial supporting range of appendices including *aide-memoire*, questionnaire and attitude scales, a long list of major references to books and journals and, finally, a short two-page index.

The author is head of the course development division in the Institute of Educational Technology at the Open University. He has communicated with clarity his enthusiasm for the subject and has dealt with a difficult topic in a coherent and appetite-whetting fashion, leaving this reader, at least, determined to take up some of the references.

This book is recommended as a good synopsis of present-day views and techniques concerning the evaluation of in-service work. Try it – it will disturb you and make you question your own professional approach.

A. G. CLEGG

Colleges in crisis

David Hencke

Penguin £0·95 paperback

David Hencke, as a participant observer in the last years of the crisis for the colleges of education, certainly contributed to the confusion and uncertainties of that time. His book, however, seeks to bring some order into a sorry tale, and like much journalism and very modern history it presents those of us who had small walking-on parts with a drama that we recognize to be largely true to fact and yet not entirely true to experience; a salutary reminder of the fragmentary and partial nature of all historical study.

The book begins with a brief scamper through the history of the colleges from Joseph Lancaster to Lord James, highlighting the ambiguities and tensions of a system designed to produce for working-class schools teachers who would not seek to develop ideas above their academic, social or professional status. There follows a complex narrative of events between the setting up of the James enquiry in 1970, and the 'final decisions' on the size and shape of the enterprise in 1977. The account is complex and confusing because the events themselves were confused, changes rapid, and important pieces of evidence not available. The rest of the book contains four brief case studies of institutions affected by the ensuing uncertainty, and ends with a discussion of the enormous difficulties that confront a broad and complicated service when it is faced with the need for large-scale changes in an area where there is little party political kudos to be won, no professional or ideological consensus, and a plethora of vested interests.

Mr. Hencke is right to put the blame for the severity of the crisis on the lack of interest and political will in both parties and on the irrelevance of much of the James enquiry. In the long term, we ought to feel gratitude for the stand that committee took on induction and in-service provision, but in the short term its idiosyncratic membership (too small, too masculine, too limited in its interests), its

political naïveté and the requirement for it to pronounce within a year have proved to be a disastrous and time-wasting interlude, delaying discussion of the major political and demographic issues for a crucial two years.

Mr Hencke's recipe for reform is welcome as far as it goes – less secrecy and a more clearly articulated political and administrative system for arriving at a policy and implementing it. His book itself, however, is evidence that more open government and changes in the planning processes at the DES will not in themselves solve the problems that surround policy-making in one of the most sensitive and crucial issues in any modern society. Too many people have a stake in them as ACSTT* and the old NACTST† prove – LEAs, teachers, parents, churches, universities, FE, students, employers, children – and hence the compromise solutions. The author calls them 'shabby' but they are surely inevitable in any plural society. The 'shabbiness' lies in drift and lack of political will, but then the issues pull in few votes even in marginal constituencies, and they cannot be resolved in the life of any one parliament, let alone in the brief tenure of one Minister or Secretary of State.

JOYCE SKINNER
Director
Institute of Education
University of Cambridge

Costs and controls in further education
John Pratt, Tony Travers and Tyrrell Burgess
NFER, £11·50 hardback, £6·00 paperback

Here is a useful and almost up-to-date primer and undoubtedly a challenging contribution to debate. Forthright, yes; opinionated, maybe; but it should provoke defences from policy-makers. The book rises to good standards of commentary and criticism but descends in places into sharp attacks on the actions and assumed motives of other authorities on this subject. What responsible body, for example, would use cost comparisons in education to 'find the cheapest, and recommend expansion in the cheapest area'? What justification is there for stating 'few people in education, and indeed few members of the working group (i.e. Oakes) are now prepared to offer a considered defence to its recommendations'? Is it fair to describe the work of the Pooling Committee on student/staff ratios and performance indicators – now internationally recognized – as 'sheer fantasy'? Yes, the book is irritating, but may well be intended to have a gad-fly role.

When it comes to original ideas, a fair area of glasshouse is exposed. The main idea is that pooling should be abolished, and that academics should be responsible for the product in respect of inputs and outputs, with discretion about the mix of expenditure elements (termed by others 'virement'). Expenditure should be collected by 'responsibility centres' (no mention is made of current work on this topic done by the Chartered Institute of Public Finance and Accountancy (CIPFA)—although earlier work is mentioned on page 73). The discipline of cost accountancy is cited, correctly, as an authority, but the total purpose of costing – namely of attaching ratios, mixes and volumes to these expenditures and then studying variations – is missed. It must be asked how one is to set the appropriate costs of such centres. Perhaps at whatever is asked for? Some readers might suspect that an exemplification of required inputs is the greatest defence against unwarranted outside interference, and that the authors' counter-proposals for non-disclosure would play into the hands of those influences they are seeking to hold at bay. Another weakness is that the work of the Polytechnic Finance Officers Group (PFOG) and others is quoted, and the results of analyses are discussed at length, yet an admission (on page 93) that 'colleges with a high proportion of science students will be more expensive than one with more arts students' is totally ignored in the commentary, as are many other variables.

It is easy to attack the *status quo* and to put forward ideas that have not to suffer the practical test of implementation, but the authors are to be complimented on their industry nevertheless.

V. J. DELANEY

Evaluating the new BEd
Gerald Collier (editor)
Society for Research into Higher Education
£4·80 hardback (£3·80 to members)

This collection of papers resulted from seminars held in 1976 and 1977, the purpose of which was to examine ways of studying the

* Advisory Committee for the Supply and Training of Teachers.

† National Advisory Council on the Training and Supply of Teachers.

changes in courses of teacher education since James and the possible effects of those changes. No comfort, therefore, is offered to those who seek simple solutions to the major problems of preparing a teacher or who believe that particular patterns of course point the way. Rather is each contribution a reflection on change as it has occurred or on ways of assessing change.

The design, development and evaluation of new BEd courses are discussed (with some emphasis on professional studies), and some ways ahead are suggested. A number of recent studies in higher education have been, among other things, almost an enquiry into evaluation itself, and this collection is no exception; but evaluation as a process is well illustrated through the medium of the title-theme.

To institutions of higher education that are seriously planning to assess their achievements, whether in teacher training or more widely, and whether in retrospect or in prospect, the papers offer important guidance at the price of painstaking reading.

I. B. BUTTERWORTH

All things bright and beautiful: a sociological study of infants' classrooms

Ronald King

Wiley £7·95 hardback, £3·95 paperback

This book is orientated towards the non-sociological reader and will be of particular interest to teachers, students and others concerned with the education and care of young children.

Dr. King chose three schools in different social areas. By observing and questioning teachers over the period of one year in each school and analysing samples of children's work and school records, Dr. King came to certain conclusions. The recognizable social world of the infant classroom differed among the schools, although teachers had similar aims and objectives for their children. This raised the question of whether the differences between the schools could be attributable to the children themselves.

Teachers in the social priority school accepted that their children's levels of progress and standards of behaviour were due to their family and home background and this reassured them that they were not at fault. In the school with 75 per cent of the children coming from professional families, teachers found the children bright and well behaved. Expectations were high, for if the children failed the school would be to blame. Dr King questions closely the nature of infant education: 'the child-centred ideology of infant teachers not only defined the child but also the teacher'. He asks whether infant education is basically a middle-class culture, and how far teachers may expect children to conform to patterns of behaviour alien to their daily life.

The first eight chapters draw upon his observations in the schools and describe the common features. The remainder deal with the differences between the schools and their educational and sociological significance. Among the issues discussed are compensatory education and the policies of educational priority areas, social class and sex differences. This book claims to provide the first detailed sociological account of infant education. There are some frank comments, particularly about the attitudes and expectations of teachers. It will be of significant interest to all practising and intending infant teachers as it is an illuminating record of how teachers' actions and classroom practices are related to the nature, education and social origins of the children they teach.

P. R. MACLAY

Women and education

Eileen Byrne

Tavistock £3·95 paperback

This book is an excellent example of the best genre of writing in the social sciences: every argument is meticulously backed by detailed facts and figures, and yet the style flows easily. Although the author is making a clear case that inequality and injustice for girls and women abound in all levels of education, she makes her case calmly and reasonably, avoiding generalization and comment and allowing the facts to pile up massively and speak to the reader for themselves.

Dr Byrne says little for our comfort. Despite all the efforts of the past decades in legislation and political action, the position of women who work in the education service has grown worse and not better – if the proportion occupying senior posts is a reliable indicator. Although the academic attainments of girls entering colleges of education in the sixties were proportionately higher than those of the male entrants, yet the proportion of women in senior posts has declined in all sectors throughout the past decade. Even at primary level, where men represent only

22 per cent of the total teaching force, they occupy 57 per cent of headships and 63 per cent of scale five posts. While overall the proportion of women in the teaching force has increased in the past decade, the proportion and numbers in any leadership role have declined and appear to be continuing to decline. Furthermore, within schools women 'gravitate naturally' to pastoral work, tutor groups and counselling. This not only diminishes their own career prospects but also reinforces for their pupils the image of women in caring and servicing roles, while their men colleagues are occupied with administration, meetings, curriculum and timetabling.

As to curricular differences between the sexes, although Dr Byrne expresses disappointment with the DES 'Great Debate' contribution to this question, she speaks highly of HM Inspectorate's contribution both in the eleven-to-sixteen curriculum papers, and in the 1975 survey of curricular differences between the sexes. Her most scathing arguments, however, are directed at what she calls the 'male-dominated technical, scientific and commercial' sector of further education. Although FE is the only sector in which women predominate as students, it is also in this sector that the figures show most starkly the division, by sex, into courses which reflect the most rigid sex stereotyping of career expectations. Dr Byrne describes the position of a hypothetical girl from a Northern mill town who attends a local technical college: 'it will, typically, have a male Principal. Ninety per cent of the staff will be male, including the registrar. The only women she will see will be the lecturers in charge of Secretarial Studies, the Head of catering and welfare studies and possibly one or two women lecturers in English and foreign languages, the secretary and cleaners. . . . The sports facilities will almost certainly be limited to rugger or soccer, and the college will be dominated by workshops and boilersuits, except in the new block built to house expanding BEC and TEC middle-range courses in non-craft subject areas'.

At the end of this fascinating and compelling book, one can only say 'we must do better' and offer an amen from the heart to Dr Byrne's hope that 'we shall not be debating women's under-achievement when (in retirement) my generation sees the 21st Century safely in'.

PAULINE PERRY

A new examination of examinations
Robert Montgomery
Routledge and Kegan Paul £3·95 hardback

This is a useful and very readable book for the student or teacher wishing to acquire a general view of the now complex and copiously documented examinations field. Dr Montgomery covers a great deal of ground on their history, their purposes and effects and brings us almost up to date on current issues. In technical matters he encompasses many types of test and deals clearly with important factors such as reliability, validity and teacher participation. On the way he treats us to some entertaining and useful insights and restates important axioms. He maintains a salutary scepticism about the role of examinations in the world at large but does not undervalue their effect on motivation and as qualifications.

It is a pity that the confines of eighty-eight pages prevent Dr Montgomery from developing themes (the effects of examination on teaching, for example), and make him occasionally appear to overstate his case (did examinations have the effect of shifting the very nature of society or were they another symptom of the *Zeitgeist?*) and discount achievement (for instance in curriculum development). It is at least arguable that the influence of mass examining is partly due to piecemeal growth and the absence of radical planning. And while Dr Montgomery rightly emphasizes the advantage that examinations hold in giving structure to the subjects of the curriculum, must we accept that they – devised as they are for the purposes of testing – should stand as proxy for properly devised aims and objectives translated to a teaching syllabus decided on its merits? Again, the argument that a less radical reform of examinations at sixteen might be entertained because the means are already available through common certification and common grading plays down the view that fundamental rethinking on syllabuses and forms of assessment may be central to such a change. The reader wishing to pursue these issues and more technical matters will need to delve elsewhere – and there is a bibliography to guide him. This slim volume supplies a helpful stimulus.

BRIAN ARTHUR

ADDITIONAL BOOKS RECEIVED

BROWN, GEORGE. *Lecturing and explaining.* Methuen, £3·95.

CENTRAL COUNCIL FOR EDUCATION AND TRAINING IN SOCIAL WORK. *Report three 1974–77.* Central Council for Education and Training in Social Work, £1·25.

COPLIN, WILLIAM D. *Teaching policy studies.* Lexington, £11·50.

CURSON, CHRISTOPHER. *Health and safety at work in the public services.* Longman, £2·00.

FIELDEN, J. and P. K. PEARSON. *Costing educational practice.* Council for Educational Technology, £4·75.

HAIGH, A. M., J. Q. HAWKINS, S. J. HOLMES and P. S. THORN. *Springboard mathematics: book 1 with answer sheet.* University Tutorial Press, £1·40.

HAIGH, A. M., J. Q. HAWKINS, S. J. HOLMES and P. S. THORN. *Springboard mathematics: book 3, with answer sheet.* University Tutorial Press, £1·30.

HYNDMAN, MICHAEL. *Schools and schooling in England and Wales: a documentary history.* Harper and Row, £6·95 (£3·95 paperback).

KEATS, J. A., K. F. COLLIS and G. S. HALFORD (editors). *Cognitive development: research based on a neo-Piagetian approach.* Wiley, £14·00.

LIEBERTHAL, EDWIN M. *Chisanbop finger calculation method: addition.* Van Nostrand Reinhold, £3·95.

MOWAT, JACK. *Cars* (*Openers series*). Cambridge University Press, £0·65.

MOWAT, JACK. *Gardening* (*Openers series*). Cambridge University Press, £0·65.

NATIONAL UNION OF TEACHERS. *Examining at 16 plus: the case for a common system.* NUT, free.

PAFFARD, MICHAEL. *Thinking about English.* Ward Lock Educational, £2·50.

PALMER, ROY (editor). *Strike the bell: transport by road, canal, rail and sea in the nineteenth century through songs, ballads and contemporary accounts.* Cambridge University Press, £2·25.

PITCHER, JANE (editor). *Higher education learning programmes information service catalogue* 1978. Audio-visual materials intended for degree-level use produced in institutions of higher education in the UK. British Universities Film Council, £6·50 (£5·50 to BUFC members).

ROGERS, RICK. *Schools under threat: a handbook on closures.* Advisory Centre for Education, £1·50.

SARUP, MADAN. *Marxism and education.* Routledge and Kegan Paul, £5·95 (£2·95 paperback).

SEGAL, STANLEY (editor). *Books for the teachers of children with learning difficulties.* National Book League, £1·35 (£0·95 for members).

SHEEHAN, ANGELA. *The penguin* (Piccolo Explorer Books). Pan, £0·60.

STANDING COMMITTEE ON CAREERS THROUGH CHEMISTRY OF THE CHEMICAL SOCIETY. *Statistics of chemical education: third edition* 1978. The Chemical Society, £4·00 (£3·50 to members).

TOLLEY, H. and K. ORRELL. *Yorkshire and North Lincolnshire* (third edition). Cambridge University Press, £1·90.

TOWNSEND, ANITA. *The kangaroo.* (Piccolo Explorer Books). Pan, £0·60.

TRIBE, MICHAEL A., IRWIN TALLAN and MICHAEL R. ERAUT. *Case studies in genetics.* (Basic Biology Course Unit 5. Aspects of Heredity Book 12). Cambridge University Press, £9·50 (£3·95 paperback).

WEBB, KEITH. *Motorbikes* (Openers Series). Cambridge University Press, £0·65.

WELLS, DAVID. *Acid rain.* David Wells, £0·40.

WILLIAMS, E. M. *Mathematics: from primary to secondary – a Nuffield/British Council handbook for teachers.* W. and R. Chambers for the Nuffield Foundation and the British Council, £3·65.

WOLFF, MARGARET. *Me.* Abelard Schuman, £0·50.

Printed in Scotland by Her Majesty's Stationery Office at HMSO Press, Edinburgh
Dd 596182 K58 6/79 (16348)

Help for A-level Students

The Further Education Information Service (FEIS) will operate during August and September to assist school and college leavers who have one or more A-levels, or an equivalent certificate or diploma, but who are without a place on a higher education course.

Local advisory officers of the FEIS, appointed by each local education authority, will give individual advice to young people and their parents.

Leaflets and posters about the FEIS are available from Principal Careers Officers or from the Department of Education and Science, Room 2/11, Elizabeth House, York Road, London SE1 7PH.